Customer satisfaction: a framework for assessing the service quality of urban water service providers in Abuja, Nigeria

CUSTOMER SATISFACTION: A FRAMEWORK FOR ASSESSING THE SERVICE QUALITY OF URBAN WATER SERVICE PROVIDERS IN ABUJA, NIGERIA

By

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Abstract

In recent years, the usual measure of service quality through recorded complaint alone in natural monopolies such as urban water service provision is regarded by literature as inadequate. The aim of this study is to develop and test a model customer satisfaction framework for assessing the performance of public water utilities in Nigeria; in terms of service quality from the customers' point of view, and identify priority areas for improvement.

A two phased qualitative/quantitative approach was adopted for data collection. Qualitative methods involved observation of complaint handling procedures at the customer care centres, customer forums and document scanning, using a pre-determined assessment checklist; individual interviews of water utility employees and key government functionaries, using semi-structured questionnaires; and customer focus group discussions to identify customers' important requirements. Quantitative method involved questionnaires derived from the qualitative data obtained during the exploratory phase; which was piloted, refined and administered face-to-face to a stratified random sample of 1,045 connected water utility customers across the ten service areas of the Federal Capital Territory (FCT) in Nigeria, to determine the level satisfaction and priorities areas for improvement and encourage public water service providers to improve their performances.

Findings from the obtained data showed an overall Customer Satisfaction Index (CSI) of 73.4%. The customers living in the outskirts of the FCT recorded a lower minimum Customer Satisfaction Index (CSI) of 63% and are less satisfied with the service quality provided by FCT Water Board. In comparison, the medium and low density areas recorded a higher minimum CSI of 71%. Also, among the satisfaction variables, reliability of supply predicts substantial (67%) variation in overall customer satisfaction, which in turn is the best predictor of service quality. The research findings also highlighted colour and taste (water quality), as the most important customer requirements. Likewise, the priorities areas for improvement are (i) Billing; (ii) Reliability; (iii) Pressure; (iv) Helpfulness of staff; (v) Colour of water; (vi) Knowledge of staff; (vii) Taste and (viii) Courtesy of staff respectively.

One major implication of the findings is that water service providers should improve the avenues of communication between them and the customers; and not see complaint and customer satisfaction surveys as an indictment, but as a tool for capturing customers' voice about the quality of service.

Keywords: Service Quality, Customer Satisfaction, Voice, Urban Water Supply.

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Abbreviations and acronyms

MDG	Millennium Development Goals
WEDC	Water, Engineering and Development Centre
SWA	State Water Agencies
WHO	World Health Organisation
UNICEF	United Nations International Children's Emergency Fund
SAP	Structural Adjustment Programme
PSP	Private Sector Participation
PPP	Public Private Partnership
PUP	Public - Public Partnership
NGO	Non – Governmental Organisation
WICS	Water Industry Commission of Scotland
OFWAT	Office of Water Services
CCW	Consumer Council for Water
CSI	Customer Satisfaction Index
UFW	Unaccounted For Water
FCTWB	Federal Capital Territory Water Board
CRSWBL	Cross River State Water Board Limited
LWC	Lagos State Water Corporation

Glossary of Definitions for the purpose of this Study

Access: - The ability for a consumer to have a connection so as to obtain a service.

Benchmarking: - A means of quantifying the relative performance of companies or divisions. In addition, customer surveys are often used to monitor customer perceptions regarding service quality, reliability, and responsiveness to customer complaints

Complaint: - An expression of customer dissatisfaction used as an index of service quality for evaluating the performance of infrastructure companies.

Cost-benefit Analysis: - An assessment of the social costs and benefits of an investment project or of a public policy.

Developed Countries: - Those with high levels of real per capita national income of US$ 12, 276 and above, and comparably large tertiary (service) sectors.

Developing Countries: - Those with low levels of real capita national income US$ 1,006 or less, but relatively large primary sectors (such as agriculture and natural resources).

Economies of Scale: - Lower long-run unit costs with an increase in production capacity perhaps attributable to larger firms' being able to buy in bulk, organize production more efficiently, and/or raise capital cheaper.

Gross National Product (GNP): - A measure of worldwide economic activities by a country's citizens. The difference between GNP and GDP is the value of any net property income from abroad.

Informal Private Sector: - Small-scale, unofficial and unregulated provider of water and sanitation, usually to unserved areas.

Information Asymmetry: - In the context of regulation, the operator has information that is unavailable to the regulator.

Infrastructure: - The physical and financial capital embedded in public service networks, e.g., network of roads and railways, water and sewers, electricity and telecommunication.

Market failure: - A situation where the presence of positive externalities or negative externalities leads an output level for a product that is too low or high.

Monopoly: - Exclusive control of a market by a single provider, supplier or seller.

Natural monopoly: - A situation involving a single firm that can produce a given level of output at a lower total cost than can any combination of firms.

Non-governmental organizations (NGOs): - Privately financed organizations that represent particular groups or interests.

Private Sector: - A commercial organisation of any scale that is self-financing and operating for profit.

Private Sector Participation (PSP): - Any degree of involvement of the private sector in the provision of a service. PSP can be considered a more general term that also encompasses PPP.

Privatisation: - For the purpose of this study, and for distinction from PSP, full privatisation (divestiture) of water and sanitation services, e.g. UK model.

Public-Private Partnership (PPP): - Agreement between the public sector and a private sector entity, whereby both parties share risk, responsibility, and in some cases investment. PPP differs from PSP in that the private sector has a greater degree of responsibility with regard to service provision.

Public sector: - Government department or agency responsible for the provision of public water supply and sanitation services (sewerage and wastewater).

The Urban Poor: - For the purpose of this study, people who have inadequate access to water supply or sanitation services that are of sufficient quality and/or which are affordable to them.

1. Introduction

1.1 Research Context

Historically, many low income developing countries attempted to provide infrastructure services by forming state owned monopolies. It has become clear in recent decade that many public sector monopolies were inefficient provider of utility services (Jamison et al, 2004). The economics of infrastructure service delivery favour large-scale provision by public or private monopolies. In the absence of competition, utility customers have little option if the quality of service provision remains poor (Hall, 2006; McIntosh, 2003). Crosby (1979) said *"Quality is ballet, not hockey", quality is an elusive (intangible) & indistinct (obscure) construct."* Quality has been defined by several authors; however the dimensions of quality differ across organisations in the various industries due to the main difference between product and services (Barrett, 2004). Generally, a higher level of service quality is expected to lead to customer satisfaction and eventually to better customer loyalty and higher profits (Chen and Hu, 2010). The essence of quality is to meet customer's needs by providing superior value, and ultimately achieve a higher customer satisfaction (Crow, 2002). The low services quality rendered as a result of poor service culture on the part of employees of utilities as natural monopolies has resulted in low customer satisfaction and lukewarm attitude to bills payment (Mugabi et al, 2007). Customer's requirements and satisfaction are not often considered by most governments and service providers of low income countries in a monopoly set up. The customer's voice which states the needs and requirements of the customers has been slow to develop in the water sector, unlike other sectors of the economies such as transport and telecommunication where consumer organisations have demanded accountability from marketers and service providers (MNI, 2006).

Hall (2006) summarises the of state the Nigerian public utilities this way: *"There is a general agreement that the utility services in Nigeria, including electricity, telephone, water, and transport, are failing to provide and develop the services and the infrastructure required for social and political development."* Most public utilities (such as electricity, telecommunication, water, and transport) which were created to provide infrastructure services to the public (Clark and Wallsten, 2003; Hall, 2006), especially in low income countries are failing to provide the required service quality for the social and economic development of their countries (Hall, 2006).

1.2 Research Problem and Question

Many low income countries attempted to provide infrastructure services by forming state owned monopolies, as large scale provision of infrastructure is favoured because of the economics of scale. But in recent decades, it has become clear that many public water monopolies are inefficient providers of utility services, resulting in poor service quality (McIntosh, 2003; Jamison et al, 2004; Hall, 2006; Das et al, 2010). Hall (2006) further describes the water sector situation thus: "The water and sanitation sector in Nigeria is in need of both extension and improvement. Between 60% and 70% of the population is currently without either water or wastewater services but that still leaves 40-55 million customers receiving such services, a greater number than anywhere else on the African continent". Public utilities (including electricity, telephone, water, and transport) in Nigeria from experience, are failing to provide and develop the infrastructural services required for social and political development. This made Hall (2006) to conclude that the water supply systems are unreliable and under-developed, and this has contributed substantially to lowering the quality of life and well-being of the average Nigerian who, over the past four decades, has become more impoverished. From experience, the outskirts of cities and most peri-urban townships in low income countries do not have access to piped water supply, in the instance where piped water is available, they receive poor quality service which are often characterised by intermittent water supply and low pressure (McIntosh, 2003; Das et al, 2010). The urban poor customers are often served by a wide range of service providers (such as water kiosks, water tankers) operating in the informal market and usually pay more to obtain water than when supplied from the public piped network. In the absence of competition (IUCN, 2010), utility customers have little option if the quality of service provision remains poor. Albert Hirschman (1970) theory of exit, voice and loyalty states that; any individuals, business firms and organisations under any socio-economic or political system, are subject to lapses that might range from efficient, virtuous, rational, law abiding, or otherwise functional behaviour and failures of some institutions are bound to happen, no matter how well some actors in the society live up to it. It states further that ***"each society learns to live with certain amount of these failures, and in order to prevent these failures from transforming into a societal decay, forces must be marshalled within it, which will make the faltering actors revert back to the behaviour required for it to function properly."*** Utility customers, who are recipients of the service provision, should be involved in exerting pressure on urban

water service providers to improve their performance. Customers who are not happy with the service level can either do nothing about it or they can seek to improve the situation through voice.

The research question that addresses the research problem is:

> ***"How can the performance of public water utilities in Nigeria be objectively assessed in terms of service quality from the customers' point of view and highlight their priorities for improvement over a period of time"?***

The primary research question, which is further broken down into secondary questions to aid this research are:

- ☐ How do public water utility customers in Nigeria complain, when not satisfied with the service quality provided?
- ☐ What satisfaction indicator can best predict the overall satisfaction and be used to monitor the service quality of public water utilities over a period of time?
- ☐ What are the customer's important requirements and the level of satisfaction of public water utility customers?
- ☐ What are the service quality gaps and the priority areas for improvement?

The answer to the research question would help this study understand the most effective way of hearing customers voice in public urban water supply of low income developing countries.

1.3 Aim and Objectives

The aim of this study is to develop a model customer satisfaction framework for assessing the performance of public water utilities in Nigeria in terms of service quality and to identify the priority areas of service for improvement, from the customers' point of view.

To achieve this aim, the measurable objectives are:

1. To find out how public water utility customers complain and the nature of complaint, when not satisfied with quality of service provided.

2. To identify satisfaction indicators for predicting overall customer satisfaction for monitoring the service quality of public water utilities over a period of time.
3. To identify the important customer requirements and the level of customer satisfaction.
4. To determine the service quality gap between what customers expect and what they get and highlight priority areas for improvement.

1.4 Justification of the Research

Service quality has been explored in the past by numerous researchers with varying perspectives, but majority of these studies have focussed on organisations in a competitive market (Parasuraman et al, 1985, 1988, 1994; Zeithaml et al, 1988, 1990 and 2003; Cronin and Taylor, 1992; Teas, 1993) to the detriment of organisations in a monopoly. There is a need to study service quality within the context of a monopoly in a water service domain, considering all processes and operations associated with the delivery of product and customer services in low income economies. Also, the important service quality attributes perceived by customers vary from sector to sector (Kim and Kang, 1995; Baker and Tremolet, 2003). A better understanding of customer satisfaction and how this can be measured is required to provide a prominent role for customers to lead to an efficient water supply service. Hence, the justification of the critical review of customer voice in a monopoly market structure experience, in an emerging economy like Nigeria. The needs of the consumers are not often considered by governments and service providers (Sohail and Cavil, 2006; Thampi, 2006). The customer voice has been slow to develop in the water sector, unlike other sectors of the economies such as telecommunications and energy (Clarke and Wallsten, 2003), where consumer organisations have demanded accountability from marketers and service providers.

Literature have shown that the service quality requirements of infrastructure services in low income countries are usually defined on the basis of Industrialised (developed) countries standards, hence such standards are usually above the minimum acceptable standard to the poor in low income developing countries (Baker and Tremolet, 2003). There is a need to develop customer satisfaction indicators for objectively measuring and monitoring the service quality of public water utilities in low income countries, from the customer's point of view over a period of time (Myhal et al, 2008).

1.5 Methodology

Considering the nature of the research question, a deductive reasoning approach in line with the post-positivist philosophy has been adopted to guide this study in the data collection. This includes a two phased approach using the combination of qualitative and quantitative methods (exploratory and survey phase), in accordance with Parasuraman et al (1990 & 1994) and Hill et al, 2007. The exploratory phase which is qualitative comes first, and involves research for insights about possible causes of service shortfalls to obtain data, and subsequently feeds into the second (quantitative) phase. While qualitative methods involved participant observation of complaint handling procedures at the Customer Care Centres, document scanning, individual (semi-structured) interviews of water utility employees and key government functionaries; and customer focus group discussions. Quantitative methods involve carrying out face to face surveys using structured questionnaires pre-tested, piloted, and administered on existing connected water utility customers. Excel and SPSS 16 and 17 software was then used to analyse data gathered from field work. This study involved a combination of desk and field studies. Desk studies includes information collection from surveys of published books, reports, journals and grey literature of case studies from other countries to a good grasp of the study topic.

1.6 Research Scope

The research scope is limited to natural monopolies such as public water utilities in low income economies of developing countries like Nigeria and the level of service they provide to existing connected customers. Majority of the world population increase is taking place in the low income countries of Africa, and Nigeria is among the nine countries of the world whose population would account for half of the world's population between 2010 and 2050 (UNDESA, 2010). Apart from Nigeria, the other eight countries expected to account for half of the world projected increase from 2010 to 2050 are India, Pakistan, Ethiopia, United States, the democratic republic of Congo, Tanzania, China and Bangladesh (UNDESA, 2010); hence the need to focus on low income countries. This Study looked at customer service quality from the customers' point of view, and voice mechanism as a means of improving the performance of water utilities, to deliver improved service quality.

1.7 Thesis Structure

The thesis is presented to assume a linear progression with the literature review, methodology, analysis and findings are presented, and discussed in a logical way accessible to the reader. The thesis is structured into eight chapters namely:

Chapter 1: Introduction

Chapter one sets the research contexts, problem and question. It highlights the problem of poor quality infrastructure service provision in low income countries and the little option available to water utility customers when faced with deteriorating quality of service in a monopoly market structure. It states the justification and motivation of carrying out the research, scope, and methods used in carrying out the research with a definition of variables adopted for the purpose of the study.

Chapter 2: Literature Review

Chapter two gives an overview of water service provision in low income countries and the constraints hindering the performance of public water utilities; it discusses the legal and institutional framework in Nigeria. It presents a review of some customer service quality literatures. It reviews and discusses the body of knowledge relating to customer voice, service quality, customer satisfaction and loyalty. The literature reviewed is presented in five main sections: overview of water service provision in low income countries, monopoly and service quality regulation, , service quality, customer service and, customer satisfaction and loyalty, and customer voice.

Chapter 3: Conceptual Framework

Chapter three provides the conceptual framework of interdependent concepts adopted as a model from literatures reviewed on service quality, customer satisfaction and voice in enhancing the quality of service in urban water service provision.

Chapter 4: Research Design and Methodology

Chapter four sets out the research philosophy and approach that guided the design of this study and methods used in data collection and analyses. A case study strategy was adopted with qualitative and quantitative methods of data collection divided into two phases, starting with qualitative and ending with quantitative.

Chapter 5: The Study Area

Chapter five provides background information about the research setting and gives an operational and financial assessment of the FCT Water Board to deliver service in the empirical context. The chapter also presents findings from qualitative data obtained during the exploratory phase to determine the nature of complaints and identify customers' important requirements.

Chapter 6: Analysis and Presentation of Findings

This chapter presents the frequency distribution of the demographic and socio-economic characteristics from the survey of the Federal Capital Territory Water Board connected customers, and established if a relationship exist with the service quality and customer satisfaction. The chapter considered Chi-square, correlation and regression statistical methods for analysing direction of relationships and variations among the satisfaction indicators presented as findings of the study.

Chapter 7: Discussion of Findings

Chapter seven discuses all the findings from analysis of the survey data analysed in relation to the research questions that are addressed by the research objectives.

Chapter 8: Conclusion and Implication of Findings

This chapter finally concludes with a summary of findings from literatures reviewed and data analysed and the contributions that this study makes to the body of knowledge on service quality and customer satisfaction. The limitations of this study, implications for stakeholders and further research are also given.

1.8 Definitions of Service Related Terms

For the purpose of this study, the terminologies used in this section are based on a review of relevant literature, some of which are included in this chapter and others in the next chapter. The definitions are provided upfront, to establish positions adopted and enable readers to understand:

- **Service Quality:** A global judgement or attitude relating to a particular service which takes into account the difference between customer expectation of service and perceptions of the actual service provided (Kendal, 2006;

Parasuraman et al, 1985). Also, it is a measure of how well the delivered service meets the customer expectation (Lewis & Booms, 1983)

- **Customer Service**: Customer service is every encounter or interaction between a customer and an organisation or its representative which results in either positive or negative perception of a customer, depending on whether the customer's expectations have been met, surpassed or disappointed (Kendall 2006, Carlaw & Deming, 1999; Okoli, 2007).

- **Service Culture:** Culture is the operating environment (Attitudes and behaviours) that are characteristics of a particular organisation or social group that enables service to be carried out, while service culture, are elements that have the potential to affect the customer and help determine the success or failure of service encounters within the service environment (Okoli, 2007)

- **Customer Satisfaction:** Customer Satisfaction Is the overall evaluation of an organisation's expectations based on the total purchase and consumption experience with products and services as a result of customer experience over time (Kendall, 2006; Parasuraman et al, 1994; Anderson, et al. 1994)

- **Customer Loyalty:** Customer Loyalty is the preference of a customer over other acceptable products or services conveniently available (Kendall, 2006). A positively biased attitudinal behavioural response of the customer towards a service provider (Bloemer et al, 1998)

- **Customer Voice:** Customer Voice is a means of expressing service demands and relative satisfaction and dissatisfaction with service delivery (Sohail and Cavill, 2006). An attempt to change the state of affairs either through individual or collective action (Hirschman, 1970)

1.9 Chapter Summary

This chapter has laid the foundation for this study. It gives a synopsis of urban infrastructures as natural monopolies, outlining the characteristics and its importance to the economic development of a country. The lack of option for customers if the service provided remains poor and they are not satisfied with the level of service provided is also discussed. While presenting the primary and secondary research questions, the aim and objectives of the research were put in perspective. The research was also justified and a brief description of the methodology was stated.

The structure and scope of the thesis were outlined and the variables to be used in this study were defined up front. Having provided this foundation, the thesis will proceed with a detailed description of the research.

2 Literature Review

2.1 Introduction

This chapter builds on the issues discussed in chapter one and reviews literatures that relates to the customer's voice; demonstrating how it supports the existing knowledge on the service quality of infrastructure service delivery in low income countries. It presents a general view of relevant literatures on customer service quality and the theory of exit, voice and loyalty which serves as the focal theory for this research; stating the attributes, service quality dimensions, complaints handling and customer satisfaction. It concludes by looking at how customer's voice can be heard in urban water service provision and the gaps in knowledge from the literatures reviewed. The review is structured topically and divided into sections representing the concepts of service quality and customer satisfaction. The literature review was carried out to have a good grasp of issues, to understand what others have said and identify gaps. Online resources (such as Chambers and Webster International dictionaries, including economic and geography dictionaries), was used to define key words in the study area, while Water, Engineering and Development Centre (WEDC) Resource Centre and the Pilkington Library OPAC catalogue search engines were used to search for past PhD thesis and text books relating to study area. Using the Meta-lib data base sessions in the Pilkington library, over 530 hits of corresponding journal abstracts and citation indexes were accessed using key words and was saved on Refworks after determining their relevance by scanning through. Core literatures were then identified and categorised into headings which formed the section headings in this chapter. The next section gives a general overview of the challenges of water service provision in low income countries, with particular focus on Nigeria; hindering their performance to provide quality service to their customers.

2.2 Overview of Water Service Provision in Low Income Countries

There is a growing concern about the performances of public utilities responsible for supplying potable water and treating sewage (Khatri and Vairavamorthy, 2007). Faced with difficulties of maintaining aging infrastructure in times of tightening financial constraints, problems associated with service quality and reliability, and the acknowledgment of the role played by utilities in allocating insufficient water resources. These concerns have led to a heightened scrutiny of these agencies with

increased interest in reforming their operations (Hall, 2006; Renzetti & Dupont, 2003). The general public and the World Bank are concerned with the increasing failure of the public water utilities in developing countries to provide water supply; and the alternative small scale private water delivery systems (informal service providers), gives much cause for concern. It is therefore worrisome that the developing countries population, which accounts for 76% of the world population and constitutes an important part of the global economy (Ramamurti, 1992, Khatri and Vairavamorthy, 2007) is lacking behind in the Millennium Development Goals (MDG) to halve the population of people without sustainable access to safe drinking water and sanitation by year 2015. According to WHO/UNICEF (2006) report, the world is on track for reaching the Millennium Development Goals (MDG's') drinking water target, to half the population without sustainable access to safe drinking water and basic sanitation by 2015; but Africa lags behind. Attention is now being focussed on Sub-Sahara Africa; as people without access to safe drinking water have increased by 23% instead of decreasing, and people without basic access to sanitation increased by 30% between 1990 and 2004. Meeting the MDG's for drinking water and sanitation for the region requires more effective efforts by all stakeholders (WHO/UNICEF 2006). The major challenges of achieving the MDG's are:

- Keeping the current coverage levels against the rapid pace of urbanisation
- The back log of rural people yet to be served with safe drinking water and basic sanitation.

While the developed countries are trying to cope with the increasing demand for infrastructures services and the reducing capacity to finance and manage new infrastructure on the international scene (Margueron 2001), the developing countries are coping with infrastructure decay and inefficiency. The already inadequate transport networks are deteriorating rapidly and costly investment in road construction have been wasted due to lack of maintenance in many developing countries, and electricity which is yet to reach majority of the population, has an unreliable output. On the average, only 40% of the power generating capacity in developing countries is available for production. Coping with infrastructure future challenges would involve tackling inefficiency and wastes both in investment and service delivery (World Bank, 1994; 2004). This poor performance being experienced, provides a strong reason for a broadening the approach from not only increasing the quality, but improving the quality of infrastructure services. In Nigeria according to

Hall (2006), “The water and sanitation sector in Nigeria is in need of both extension and improvement; between 60% and 70% of the population are currently without either piped water or wastewater services, that still leaves 40-55 million customers receiving such services – a greater number than anywhere else on the African continent. Most of the consumers, who receive piped water services, are supplied by state water corporations (Agencies); all of which are currently owned by the Governments of the states within which they operate. In the rural areas for example, about 49% of the population have access to safe water and 30% to improved sanitation facilities, and about 72% of the urban population have access to reliable water supply of acceptable quality; while sanitation coverage is estimated at 48% (FMWR, 2006). Except for Abuja and limited areas of Lagos, no urban community has a sewerage system, the leakage rates are around 50% (Hall, 2006). Furthermore, the proportion of piped water lost to wastages and illegal connections is actually rising; and many State Water Agencies (SWA’s) lack the capacity and financial resources, and so are finding it difficult to meet the existing demand for safe water and sanitation within their respective areas. In the far north and southwest of the country there are water shortages, and in the Delta region, and near major cities, there is insufficient control of water pollution and serious erosion. Similarly, the water sector in Kenya has been a sector in crisis. They are overwhelmingly characterized by inefficiencies, lack of investment, poor management and a confusing arrangement of legal and institutional frameworks (Baker et al, 2007). The sector in addition, has suffered from poor governance, manifested in high levels of corruption; it lacked clarity of roles and responsibilities, transparency and accountability by the service providers (Mugabi, et al, 2007; Schwartz, 2008). In addition to these institutional and financial challenges, the exponential growth of Kenya’s urban centres has put increasing pressure on utilities to extend services to new areas (Baker et al, 2007). The reasons for the poor water sector performance are discussed in the next section.

2.2.1 Challenges of Water Sector Performance

One of the major challenges facing the developing countries, is water supply (development and management); but the debates concerning increase in access are not new (Prasad, 2007). In developing countries for example, water supply and sanitation problems can be identified as leaking pipes, low water pressure, poor water quality and low service coverage. To achieve such improvements, the underlying causes of poor performance needs to be identified and remedied. The underlying causes identified by Ehrhardt et al, (2006) include:

- Low investment and poor maintenance of assets caused by inadequate cash flow due to low tariff set and high personnel overheads
- Poor planning and government not honouring the investment plan
- Weak institutional structures and political interference
- Lack of clear cut water policies for expansion on service coverage and standards
- Lack of monitoring, evaluation and enforcements of service standards
- Lack of legal recognition and barriers for informal service providers to participate in service delivery

The infrastructural challenges as summarised by Margueron (2001) are: lack of access to both rural and urban poor; high unaccounted for water (UFW) in the range of 20 – 40%; operational losses as a result of non-market prices due to inability to charge; improper and irregular subsidies; lack of pre-maintenance inspection and system maintenance; overstaffing and high personnel turnover; over exploitation of water resources; and externalities – lack of waste treatment. The operating inefficiency due to inadequate maintenance and deteriorating facilities has further led to poor service levels, which has in turn led to low cost recovery. This continuous circle has been labelled as the “Vicious Cycle of Infrastructure Management” by both Margueron (2001) and Ajisegiri (2007). The most important of the challenges, has been classified by Prasad (2007) under five distinct headings:

- **Infrastructure:** Reducing leakages, replacement/expansion of networks, technological innovation ;
- **Financial:** Sustainable and equitable tariffs, efficient revenue collection, investment;
- **Environment and Health:** Public health needs, conservation;
- **Socio-political:** Having affordable price, transparency, accountability, expansion of coverage; and
- **Managerial:** Improving efficiency and productivity, capacity building, efficient procurement

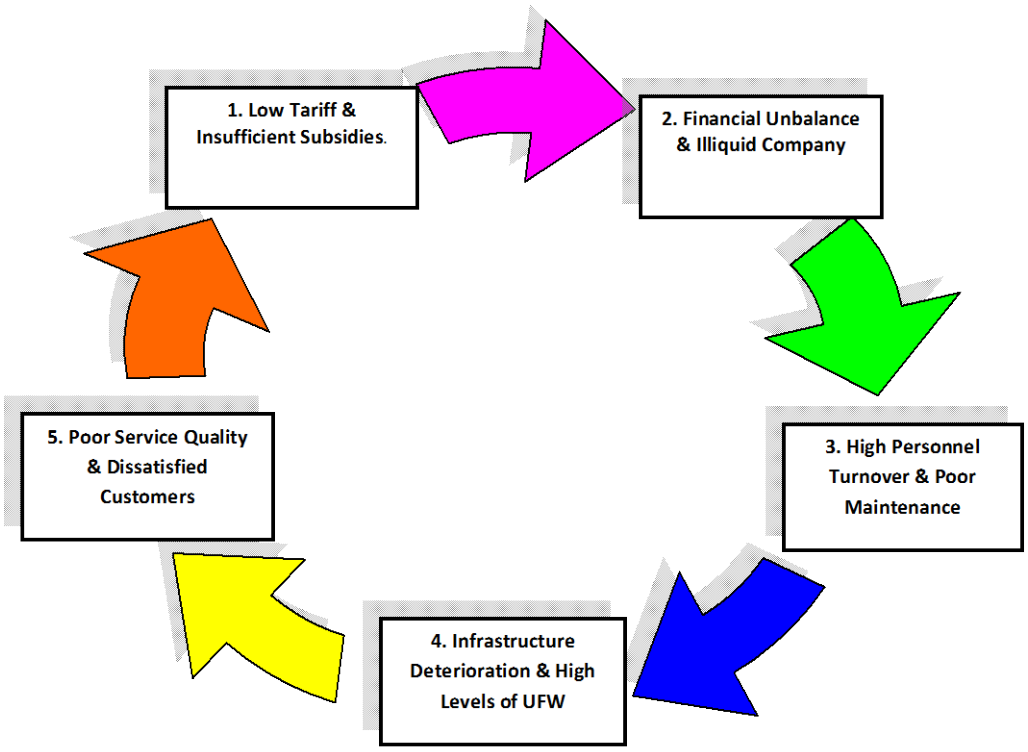

Figure 2.1 : The Water Sector Challenges

However, World Bank report (1994; 2004) summarises these identified challenges into three major categories for the poor performance of public utilities. These are:

- The provision of services by utilities without competition
- Lack of incentives for individuals and organisations responsible for managing the provision of services
- Customers are not involved in the processes of planning, delivery and regulation of the services

The challenges facing the development countries water supply, has brought into focus the urgent need to manage water supply effectively and efficiently in a sustainable manner. The need for water service providers to financially sustainable to continue providing water services is discussed in the next section.

2.2.2 Sustainability of Urban Water Supply

Sustainability being a cross cutting issue that concerns all sectors of the economy, is increasingly referenced both in developed as well as developing countries as part of everyday operations of infrastructures such as water utilities. This necessitated a global debate and the adoption of agenda 21 at the earth summit in Rio de Janeiro in June 1992, the decisions that potentially changed the way we live and work till the next century (UNCED, 1992). Sustainability was primarily considered as the continuation to improve human wellbeing, while not undermining the natural resource base on which future generations or that which meets the needs of the present, without compromising the ability of the future generations to meet their own needs (Adams, 2006). These are vague and captured only two fundamental issues (environmental degradation and economic growth). Several authors have defined sustainability and model for measuring it since 1987; however, the most appealing one is that which is based on a three part model which integrates environment, economy and society (Dorcey, 1991; Adams, 2006; AWWA, 2009). Adams (2006) however asserts that the core main stream of sustainability thinking has become the idea of three dimensions which includes environmental, social and economic sustainability. The three pillars of sustainability are social, economic and the environment and how they interact is illustrated in figure 2.2.

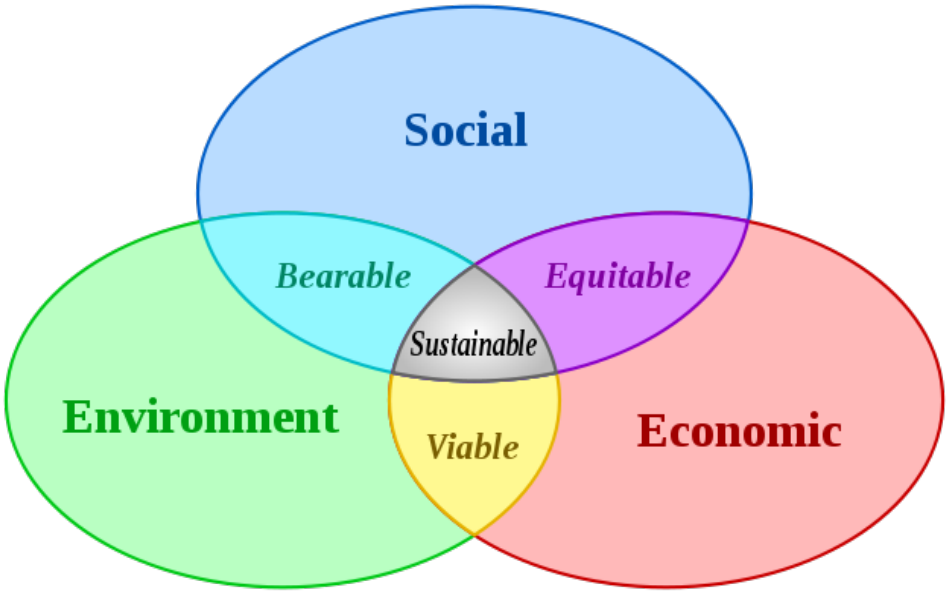

Figure 2.2: Sustainability Concept

Source: Adams, W.M. (2006)

There are still some misunderstanding about what sustainability stands for in the context of water supply. The term “sustainability” in the context of this study however, is limited in its meaning. It is not used to refer to the “bearable” tension between development and the natural environment, but rather to refer to the narrow context of water supply and sanitation service delivery in a developing country. The provision of adequate water supply and sanitation services to developing countries has been a task that has occupied the minds of all concerned, particularly the Governments. Since sustainability has been extensively used in this study, it is important to define the term sustainability up front, in the context of low income economies of developing countries. Sustainable water supply means providing an adequate and reliable water supply of desired quality for now and the future generations, in a manner that integrates economic growth, environmental protection and social development (AWWA, 2009). This has been successfully applied to the context of water supply to communities in developed countries, but it is yet to be successfully adopted in the low income developing countries. As part of an on-going attempt to solve the problem of lack of sustainability of water supply services in developing countries, Abrams (2005) provides a conceptual framework for understanding sustainability. In the

context of water supply; sustainability refers to, whether water continues to be pumped from a water scheme for the period it was designed at the same quantity and quality, without adverse effect on the environment (Abrams, 2005). Simply defined, sustainability means “to design, build and manage improved water services in such a way that they will continue to function reliably and well and the funds for keeping them functioning, continues to be available.” “Functioning reliably” in this context means that, the system continues to function throughout the year at convenient operating times with only few breakdowns, which are quickly repaired; while “functioning well” means, the system supplies enough and acceptable quality water to meet the basic needs of all households in the defined project area. It means, enough money would continue to be available to operate and maintain the system at the agreed standards and to expand in time to cope with the population growth and increased water use.

The key concept today for water projects is to ensure sustainability in a way that they would be able to generate funds to keep them running well. The relationship between the consumers and water boards are very critical at the planning and operation and maintenance stages, as failures of projects can be traced to the beneficiary communities or the water board not being able to meet the necessary commitments to keep the water scheme running. AWWA (2009) however emphasises the importance of institutional autonomy by stating that so many water schemes have failed; no matter how well they are designed, but because the institutions are weak and have not been well conceived. It posits that the sustainability of a water scheme is determined by the people that would run it and those that will benefit (Stakeholders). This means the water scheme must qualify to be run without interference, it must be able to operate and carry out preventive maintenance and the consumers must be willing to pay tariffs that would cover the operating cost. This study will however focus on financial sustainability which is vital to the strengthening of institutional autonomy.

2.2.3 Financial Sustainability

Recognising water as an economic good is the first step towards financial sustainability of water supply. Although, viewing water primarily as a 'social good' historically has led governments to provide free water service to the people without considering the cost of providing the service or acknowledging water as a scarce resource. Experience worldwide have now taught us that water services provided

freely or at a low cost are not conserved or respected. There has been substantial confusion to the non-economist, what the statement, 'an economic good means'. The disagreement among water professionals and various countries is the cost to be recovered. While it is alright to recover operational cost with profit and returns on investment in industrialised countries like the UK with a developed (industrialised) economy; it might not be alright in many developing countries in Africa and parts of Asia with low income economies like Nigeria due to poverty level. However, the rural and urban poor in low income developing countries are already been forced to treat water as an economic good because of the high price they pay to water vendors or, heavy time cost to fetch water from long distances (Abrams, 2005,). The not so poor who live in low density areas of the townships, enjoy almost regular water supply provided by the public water utilities. How then, can the water service providers be made efficient?

2.2.4 How can Service Water Providers be made Efficient and Accountable?

The rate at which populations are increasing in developing countries aggravated by the depletion of the available water sources throughout the world (Khatri and Vairavamorthy, 2007) requires an action plan for the fast growing population in a sustainable manner, and at the same time, protecting the needs of the poor and vulnerable. The benefits would include alleviating poverty, reduction in health costs and stimulating economic growth (WHO/UNICEF, 2006). The services that are delivered, especially in many developing countries can be less than ideal. Ehrhardt et al. (2006) asserts that service quality may be low, service provider's financial capacity to deliver may be under threat and a large section of the population may not receive service at all. Therefore, an action plan is required to:

- Identify water and sanitation objectives
- Define policies and governance arrangement

2.2.4.1 Identifying the Water and Sanitation Objectives

After identifying the key water sector constraints, Ajisegiri (2007) suggests that the water and sanitation objective should include but not necessarily limited to (Margueron, 2001; Baker et al, 2007; Ajisegiri 2007):

- Safe and adequate water and sanitation for all inhabitants in the area as many still rely on water vendors and on site sanitation that may be unsafe and inconvenient.

- Sufficient investment in infrastructure to meet new demands and increase access because of low cost recovery and the dwindling funding from government which the water utilities now rely on, for operation and maintenance purposes.

- Good management that keeps costs of service low to curb wastages and inefficiencies occasioned by corruption and administrative shortcomings.

2.2.4.2 Defining Policies and Governance Arrangements

Having identified the water and sanitation sector objectives, Governments need to define a path of reform that can move the sector forward to the ideal services that people desire. But first, Baker et al, (2007) and Pattanasukwasun & Bull (2002) states that it has to make clear decisions on who should make policy decisions; who should own and operate the systems and how it would be regulated (see figure 2.3 for existing institutional arrangements in most developing countries).

- Policy maker: Clearly define through legislation the front line Ministries that would be involved in policy issues to prevent overlapping of functions and conflicts which is associated with the public sector

- Operator: Whether Public or Private Companies should operate the systems in what would be known as Public-Private partnership or Public-public partnership.

- Regulator: Define and clarify the kind of regulatory regime, whether Independent or Government Organ would be responsible to ensure investors' confidence.

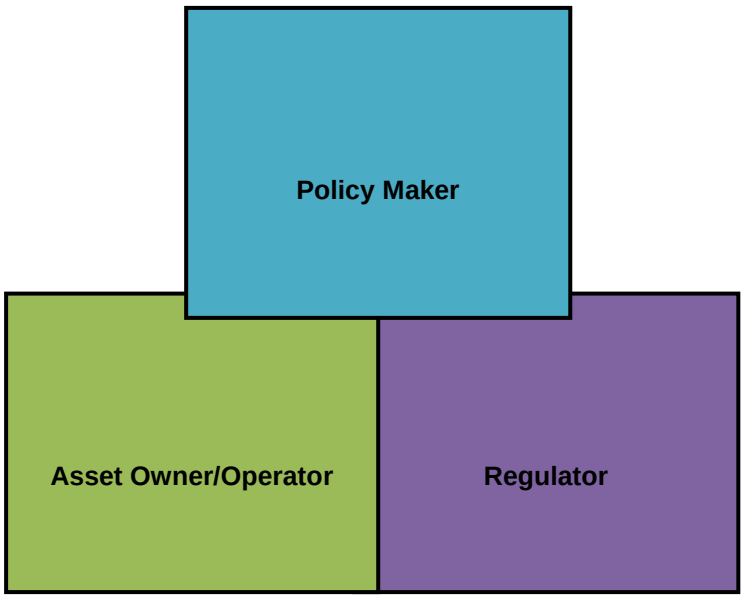

Figure 2.3 Existing Institutional Framework

2.2.5 Water Sector Reform

In response to disappointing service and financial performance by conventional monopolies, many public sectors are undergoing serious reform in developing countries to make water utilities efficient and effective (Baker et al, 2007). These reforms typically change the structure and ownership of the industry as illustrated in figure 2.3, introducing competition and private capital. The structural options available to Governments as they reform their utility sectors are outlined below (Presad, 2007):

- · Un-bundling an integrated monopoly provider;
- · Changes in ownership structure; and
- · Allowing entry by new providers in some market segments.

The possibilities for new structures are numerous thus, providing a framework within which the main options can be identified, and the relationship with each other can be seen (see figure 2.3 for model institutional arrangements). Ajisegiri (2007) suggests that Government first establishes an asset holding company and signs contract to delegate the responsibility for water services to the created asset holding company (AHC). Secondly, Government also establishes an independent regulator that would oversee investment by the asset holding company and also regulates economic and quality of service provision, and lastly the asset holding company appoints and signs

a contract with water service providers. Water service providers ensure quality of service to customers, and the use of customer charters is encouraged. Incentives are given to the water service providers if charters to customers are met, while fines are issued when customer's charter are not met.

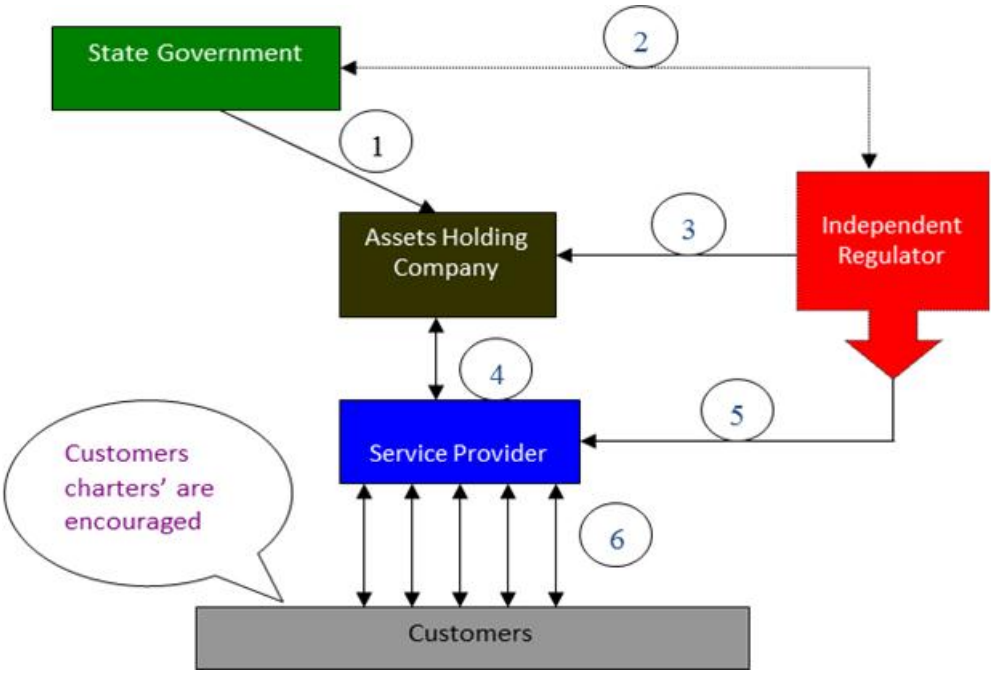

Figure 2.4: Model Institutional Arrangement for Water Supply

Source: Ajisegiri (2007)

It is therefore clear that there should be a broad and clear direction for the reform. Although additional funds would be needed, wasteful inefficiencies should be avoided by improving maintenance and increased customer satisfaction. Hitherto, the World Bank report (1994) has identified three broad actions that would be required to achieve this improvement. These actions are applying commercial principles to infrastructure operations, encouraging competition from appropriately regulated private sector providers (regulation) and increasing the involvement of customers (users) and other stakeholders in planning and monitoring of infrastructural services. Options for effecting changes to improve infrastructure provision and performance, while expanding capacities to provide infrastructure services include: private sector participation (PSP) – This involves public ownership and private operations; full privatisation – This involves private ownership and private operation and public - public participation (PPP) – This involves public ownership and public operation.

2.2.6 Urban Water Supply in Nigeria

Nigeria is considered to be abundantly blessed with water resources; the surface water resources potential of the country is estimated at 267.3 billion cubic metres, while the groundwater potential is 51.9 billion cubic metres (FMWR, 2004). However, a large percentage of the country's population which is estimated to be in the neighbourhood of 150 million (UNDP, 2009) does not have access to potable water (FMWR, 2004). Most consumers who receive piped water are supplied by state water corporations (Boards), all of which are currently owned by the Governments of the states within which they operate. In rural areas, about 49% of the population have access to safe water and 30% to improved sanitation facilities. About 72% of the urban population have access to reliable water supply of acceptable quality; sanitation coverage is estimated at 48%. Except for Abuja and limited areas of Lagos, no urban community has a sewerage system. It is estimated, according to Multi-indicator Cluster Survey of 1999 by the Federal Office of Statistics, that only 52% of the urban (48% if peri-urban areas are included) and 39% of rural dwellers have access to potable water. The percentage distribution of dwelling units by the type of water supply is shown in table 2.1 and highlighted with the graph in figure 2.5., of which pipe borne contributes only 15.35% in 2006.

Table 2.1: Percentage Distribution of Dwelling Units by Type of Water Supply

	1999	*2000*	*2001*	*2002*	*2003*	*2004*	*2005*	*2006*
Pipe borne Water.	24.38%	45.90%	55.07%	23.38%	15.78%	14.50%	16.20%	15.35%
Borehole Water.	11.83%	16.60%	0.68%	17.02%	22.04%	17.60%	24%	20.80%
Protected Well.	28.27%	2.30%	14.31%	26.76%	27.83%	36%	25.10%	30.55%
Streams & Ponds.	33.82%	33.60%	29.94%	32.08%	33%	31.50%	33.50%	32.50%
Water Tanker.	1.70%	1.70%	0%	0.85%	1.35%	0.40%	1.20%	0.80%
Total	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**

Source: National Bureau of Statistics (NBS)

The downward sliding threshold of pipe borne water from 55.07% in 2001 to 15.35% in 2006 (see figure 2.6) is also worrisome. Leakage rates are around 50% and the proportion lost to wastage and illegal connections is actually rising (FMWR, 2004).

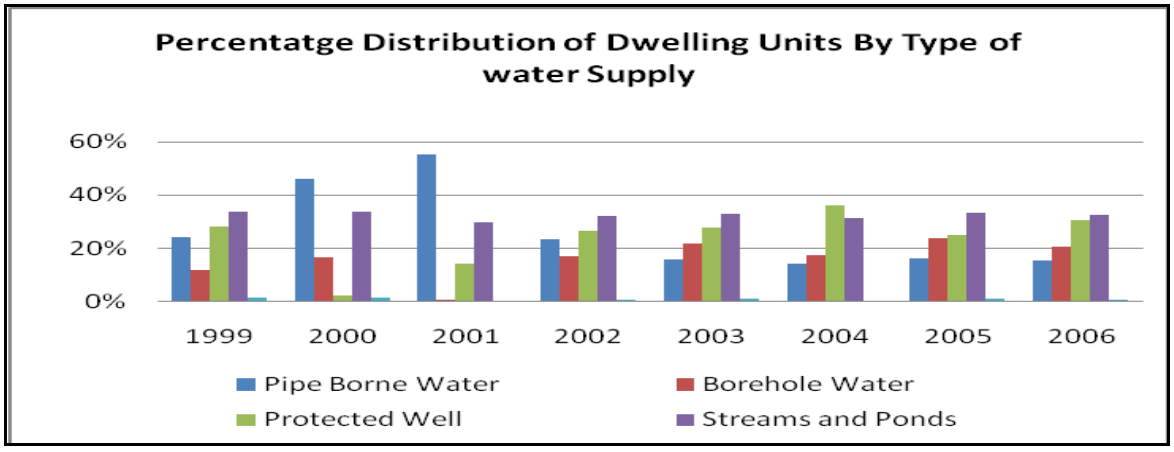

Figure 2.5: Distribution of Dwelling Units by Type of Water Supply

Many water agencies lack capacity and financial resources and so are finding it difficult to meet the existing demand for safe water and sanitation within their respective areas. In the far north and southwest of the country there are water shortages, and in the Delta region, and near major cities, there is insufficient control of water pollution and serious erosion.

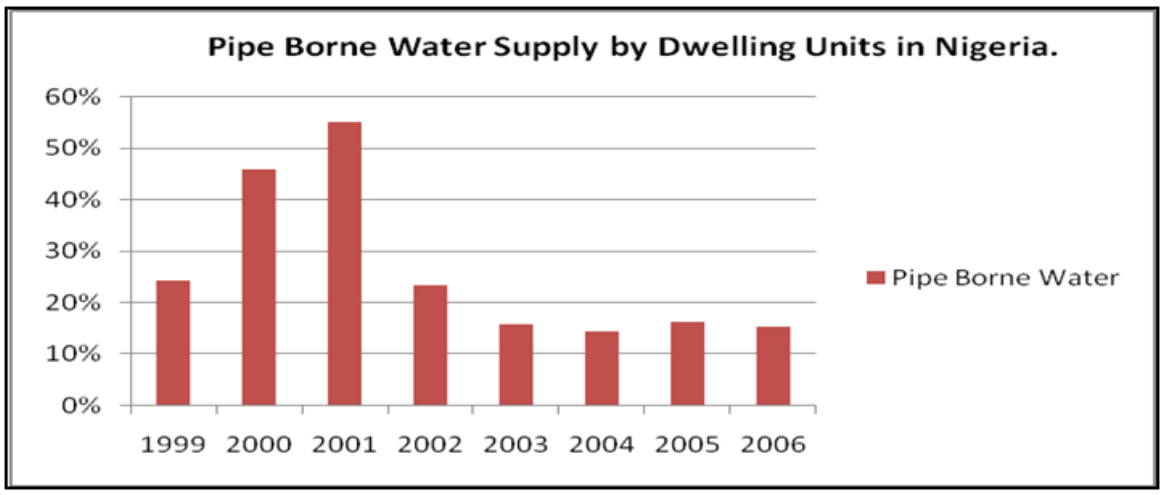

Figure 2.6: Pipe Borne Water Supply by Dwelling Units in Nigeria

2.2.7 Legal and Institutional Framework

Nigeria being a Federal republic is made up of thirty six states, and the Federal Capital Territory (FCT). All the thirty-six states of the federation and Federal Capital

Territory (see figure 2.7) today, have Water Boards or Corporations i.e. public utilities managing their public water supply schemes; with their efforts being supplemented in many cases by Local Governments supplying water to small villages in their areas of jurisdiction.

Figure 2.7: Map of Nigeria Showing the 36 States and the FCT.

Source: Maps of world (2011)

They are saddled with the responsibility of providing water supply to their various state citizens by the 1999 constitution (FRN, 1999). Even at the states level, water laws exhibit similar characteristics as those at the Federal level. The State Water Agencies (SWA's) have unclear and conflicting roles i.e. they are both suppliers and regulators (they combine policy making, service delivery and regulatory functions). As presently enacted, state water laws fail to recognize the need for stakeholder participation in policy, planning and management decision (FMWR, 2007). Following the enactment of the Water Act 101 of 1993, and the preparation of the National Water Resources Master Plan (NWRMP) of 1995, the Water Resources Management Reform Programme (WRMRP) commenced in 1997. This programme carried out a water sector review with respect to the legal and regulatory framework; institutional framework and participatory approach; information and water resources data base; water resources economics and financing; environment and resource

sustainability; water resources infrastructure; assets management and international waters. The three levels of institutional arrangement that exist in Nigeria are; the Federal, State and Local, share responsibility for water resources management. This has led to fragmentation, duplication and lack of inter-sectorial coordination with each segment pursuing its independent water agenda. The institutional arrangements in Nigeria's water resources are as follows (see figure 2.8):

- Federal Government Level – (Federal Ministry of Water Resources (FMWR) including 12 River Basin Development Authorities (RBDA's) and National Water Resources Institute (NWRI). The Federal Ministry of Water Resources is responsible for formulating and coordinating national water policies, development and management of large water resources infrastructure, dam reservoirs, irrigation and water supply schemes.

- State Government Level – (State Ministry of Water Resources (SMWR) and State Water Agencies (SWA's). The State Ministry of Water Resources is responsible for potable water supply, through the State Water Agencies.

- Local Government level – Department of Rural Water Supply DRWSS). The local Government is responsible for provision of rural water supplies and sanitation facilities through the Department of Rural Water supply and Sanitation. Community level participation in rural water supplies and sanitation.

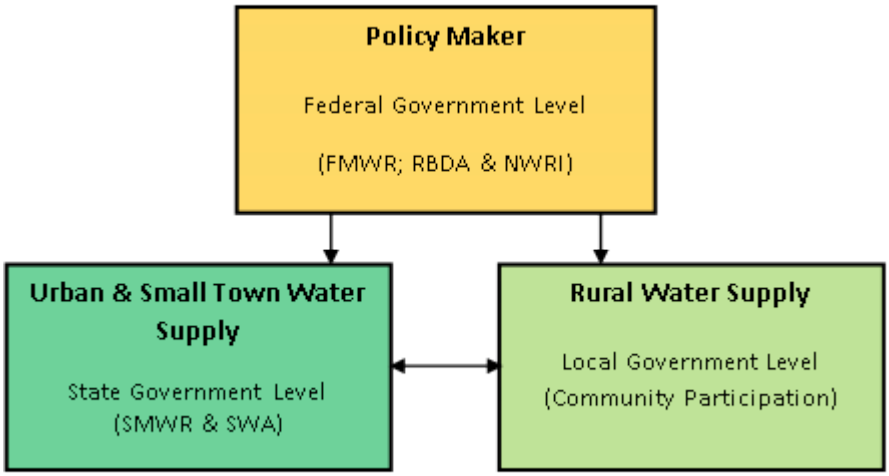

Figure 2.8: Existing three levels of Water Sector Institutional Arrangement in Nigeria

2.2.7.1 The Federal Ministry of Water Resources (FMWR)

The FMWR is the parent Ministry responsible for resources mobilisation and initiation of preparatory activities programme. This includes adoption of policies and guidelines with the Director of special duties, representing the Minister, who is head and chief operating officer of the Ministry (FMWR, 2004). FMWR plays only an advisory role and cannot enforce any regulatory powers on the States and Local Government (FMWR, 2007). The salient features of water resources management in Nigeria include: weak data base, fragmented responsibility and weak institutional framework among others. Because of the fragmented and uncoordinated approach to water management issues, the regulatory and monitoring machinery within the water sector in Nigeria is diverse, diffused and weak.

2.2.7.2 The River Basin Development Authorities (RBDA)

The River Basin Development Authorities (RBDA's) came into existence following the promulgation of Decree 25 of 1976 (RBDA Act, 2004). They were conceived as vehicles for attaining a pan Nigerian Programme of water resources development. The current law on RBDA's is the RBDA Act; cap 396 Laws of the Federation of Nigeria, 1990. This statute spells out diverse functions and objectives for these Authorities from which it may be inferred that their existence nationwide propels their acceptance as an appropriate unit for water management. Section 4(1) (a)-(d) of the RBDA Act vest the Authorities with the legal powers to undertake comprehensive development of both surface and underground water, to construct and maintain dams irrigation and drainage system, to supply water to all users, and to construct and maintain infrastructural services including roads and bridges across project sites.

2.2.7.3 National Water Resources Institute (NWRI)

The NWRI enabling law is the NWRI Act, Cap 284 LFN 1990. Section 2, thereof, spells out the functions of the institute in both general and specific terms. It is empowered to perform engineering research function related to such major water resources projects as may be required for flood control, river regulation, reclamation, drainage, irrigation, domestic and industrial water supply, sewage and sewage treatment. The institute is further charged with the performance of other functions related to planning of water resources management and river basin development. Quite significantly, the institute has a specific legal mandate to promote the establishment of a uniform national data collection system relating to surface and subsurface water resources. It is yet to fulfil this mandate owing to a variety of factors

including paucity of funds, shortage of skilled manpower, and inadequate equipment among others. The next section defines Infrastructure services from various perspectives with its role and importance in the development of the economy of a country and the nature of infrastructure as a monopoly, which is characterised with inefficiency.

2.3 Infrastructure Services

Infrastructure is a term used to describe essential facilities for cities and communities which includes transport system (roads, bridges, mass-transit systems, railways, sea and airports); electricity (power plants, substations, power grids and electrical lines); oil and gas; water supply (water treatment schemes and lines, sewers) and telecommunication (telephones and broadband) which are the sub sectors of the economy of a nation and are a crucial input for its social and economic development (Irwin and Brook, 2003; Presad, 2007). The World Bank (2004) further treats power, water supply, sewerage, communication, roads & bridges, airports, railways, housing, urban services, oil and gas production and mining sectors as infrastructure. O'Sullivan and Sheffrin (2003) on their part used the term to typically refer to the technical structures that support a society, such as roads, water supply, sewers, power grids, telecommunications, and so forth. In some contexts; while Sohail and Cavill (2006) posit that the term may cover a variety of activities which include basic social services such as schools and hospitals, drainage, solid waste management, community buildings, street lightings and rood paving's. These services are normally the responsibility of local government.

The efficiency of their management, contributes to the standard of living by impacting on the welfare of citizens. One of the greatest challenges facing low income countries today is the provision of basic infrastructure such as electricity, telecommunication, transportation and water and sanitation services. The provision of infrastructure services are often characterised by inefficiency resulting to poor service quality.

2.3.1 Characteristics of Infrastructure

For the purpose of this study, infrastructure is defined as a network of facilities and services of a country which enables governments to carry out all the economic activities. They are characterised by large physical network and high capital assets (Pindyck and Rubinfield, 2000; Markard, 2009) and generally has the following attributes:

- *Capital assets that provide services:* - They are physical assets that provide services; the people employed in the infrastructure sector generally maintain, monitor and operate the assets, but do not offer services directly to the clients or users of the infrastructure. Interactions between workers and clients are generally limited to administrative tasks concerning ordering, scheduling or billing for services.
- *Large physical networks:* - They are large networks constructed over generations, and are not often replaced as a whole system. The network provides services to a geographically defined area. The system or network has a long life because its service capacity is maintained by continual refurbishment or replacement of components as they wear out.
- *Interdependence:*- The system or network tends to evolve over time as it is continuously modified, improved, enlarged, and as various components are re-built, decommissioned or adapted to other uses. The system components are interdependent and not usually capable of subdivision or separate disposal, and consequently are not readily disposable within the commercial marketplace. The system interdependency may limit a component life to a lesser period than the expected life of the component itself.
- *Natural monopoly:* - The systems tend to be natural monopolies, where the largest supplier in an industry (often the supplier in a market), has an overwhelming cost advantage over other actual and potential competitors. The assets have a high initial cost and a value that is difficult to determine. This acts as a barrier for new entrants from entering the market profitably, since incumbent's faces declining average operational cost. Once most of the system is built, the marginal cost of servicing additional clients or users tends to be relatively inexpensive, and may be negligible if there is no need to increase the peak capacity or the geographical extent of the network.

2.3.2 Monopoly and the Market

Economists have consistently argued that monopoly is undesirable (Stigler, 1999; Rouse, 2007; Mankiw, 2008), but natural monopolies are unavoidable like public utilities where cost and investment are high. The economics of infrastructure service delivery favour large-scale provision by public or private monopolies (Jamison et al, 2004; Hall, 2006; McIntosh, 2003). Utilities are often natural monopolies, originally created as state owned enterprise to operate the infrastructure to provide essential

services (Clark and Wallsten, 2003). Monopoly occurs in a situation where a single company owns all, or nearly all of the market for a given type of product or service. This would happen in the case that there is a barrier to entry into the industry that allows the single company to operate without competition due to economies of scale, barriers to entry, or governmental regulation (Stigler, 1999: Mankiw, 2008). In such an industry structure, the producer will often produce a volume that is less than the amount which would maximize social welfare. In the case of water, all companies such as Severn Trent Water, Anglian Water etc. all provide the same product, the infrastructure required is immense, and the cost of adding one more customer is negligible, up to a point. Adding one more customer may increase the company's revenue and lowers the average cost of providing for the company's customer base. So long as the average cost of serving customers is decreasing, the larger firm more efficiently serves the entire customer base.

Historically, such a process happened in the water industry in nineteenth century Britain, when Parliament discouraged municipal involvement in water supply (Rouse, 2007). Private companies had sixty percent of the market and competition amongst the companies in larger built-up towns lowered profit margins, as companies were less able to charge a sufficient price for installation of networks in new areas. However, in areas with direct competition having two sets of mains usually at the boundary of companies' territories, profit margins were lowest of all. Such situations resulted in higher costs and lower efficiency, as two networks were neither used to capacity. With a limited number of households that could afford their services, expansion of networks slowed and many companies were barely profitable (Pindyck and Rubinfield, 2000). A few well-run private companies that worked together with local towns and cities, gaining legal monopolies and the financial security to invest as required did survive, providing around twenty percent of the population with water even today. The rest of the water industry in England and Wales was deregulated in the form of 10 regional monopolies in 1989. Many governments in the last decade have allowed private companies to provide infrastructure services previously provided only by state owned businesses and in some cases, they have gone ahead to privatise fully (Irwin and Brook, 2003).

2.3.3 Infrastructure and the Poor

Some authors (Kessides, 1993; Nademm and Grimard, 2000; Alaba, 2001) canvassed the opinion that individuals are poor because they do not have access to

basic infrastructural services like water and electricity. The definition of the poor has been controversial, as it varies from country to country or developing countries to developed countries (Komives et al, 2003). Without making the poor a subject of debate, the poor have been classified into two for the purpose of this study, which would be referred to as the rural and urban poor. Urban and rural poverty differ in several important ways; most importantly, the urban poor are much more integrated into the market economy unlike the rural poor (Fay, 2005). Also, the urban poor are faced with low quality infrastructure services rather than the absence of services, as in the case with the rural poor. Although coverage rates for infrastructure are consistently much higher for the urban than the rural poor; service quality gaps remain disproportionately, and affect poor neighbourhoods (Fay, 2005). But quality and reliability are often so poor that they offset many of the benefits of services, and in turn put the social objective of water supply in danger. This is particularly true for water and sanitation, which affect poor neighbourhoods much more than richer ones, with dismal public health implications. The increased water coverage and improvement in quality that occurred as a result of the privatization of the water utility in Argentina resulted in a significant decline in child mortality, particularly in poor areas (Galiani et al, 2005).

The urban poor that have no voice when service deteriorates, is the focus of this study. The poor quality of service invariably affects both the poor and the not so poor, but it is the poor that suffers most as they cannot afford alternative means i.e. in water and the electricity sectors. The water sector is however unique, as it is affected by all the other (infrastructure) sectors of the economy of every country. Water service is crucial to the development of every nation. In view of the high incidence of poverty in the peri- urban, consideration for the poor household is of paramount importance in promoting efficient development and provision of services while ensuring adherence to equity principles.

2.3.4 Urban Poor

It is estimated that 35-57% of the urban population in developing countries of Africa and Asia still lack access to piped water supply (UNDP, 2006; WHO/UNICEF, 2010). The urban poor customers are often served by a wide range of service providers (such as water kiosks, water tankers) operating in the informal market and usually pay more to obtain water than when supplied from the public piped network. This population live at the fringes of towns and cities and reside in multi tenancy dwellings

in the slums and shanties (WHO/UNICEF, 2010; UNDP, 2006). Various approaches have been taken by developing countries to help the poor, e.g. by requiring the privatised water utilities to cross-subsidizing water rates between affordable customers as in the case of Columbia, and directly subsidizing the poor as in the case of Chile (Foster, 1998). Countries like Mexico have mandated water utilities not to disconnect the poor when unable to pay their water bill. But the poor in most cases are unable to benefit from these subsidies as in most cases they are not connected to the pipe network due to lack of coverage or cost of connection (Franceys and Gerlach, 2008; Foster, 1998). Foster (1998) argues that preventing the disconnection of defaulting customers can be counterproductive and encourage customers not to pay and thereby reducing the financial ability of the water company to reach out to new customers. She posits that a more sophisticated approach to subsidies like the Chilean approach would suit the demand of the poor customers. Citing examples from developing countries, she states that extra resources are usually required to increase coverage of basic water and sanitation services rather than quality. Drawing from the Ugandan case study (Kayaga et al, 2007) which investigated the actual cost and charges for obtaining water connection in the urban areas, it found out that a new water connection charge of $500 equivalent is unaffordable for a $2 per day households. The urban poor are therefore in most cases, unable to benefit from the piped water services. When they benefit, they are serviced with low quality of service, often characterised by intermittent water supply and low pressure. The solution to these is to regulate the water service providers to improve their service level. Regulation in whatever form is essential to build private sector operator and customer confidence.

2.4 Monopoly Regulation

In response to the disappointing service and financial performance by conventional monopolies, Eberhard, (2006) and Groom et al (2006), states that many public sectors (Telecommunication, Electricity and Water) were reformed to change the structure and ownership of the industries to introduce competition. Regulation is used to increase efficiency and protect consumer's right (Presad, 2007). The two basic schools of thought that have emerged on regulatory policy are the positive and the normative theories of regulation. Positive theories of regulation examine why regulation occurs while the normative theories of regulation generally conclude that regulators should encourage competition where feasible (Groom et al, 2006). It should also minimize the costs of information asymmetries by obtaining information

and providing operators with incentives to improve their performance; provide for price structures that improve economic efficiency, and establish regulatory processes that provide for regulation under the law; and independence, transparency, predictability, legitimacy, and credibility for the regulatory system. These theories of regulation include theories of market power; interest group theories that describe stakeholders' interests in regulation, and theories of government opportunism that describe why restrictions on government discretion may be necessary for the sector to provide efficient services for customers (Groom et al, 2006).

Rouse (2007) and Selznick (1985) agree that regulation is a sustained and focused control, exercised by a public agency over activities that are valued by the community. The early theory defines regulation as the potential use of public resources and powers to improve the economic status of economic groups such as industries and occupations (Stigler, 1971). It states that government with its machinery and power of the state is a potential resource or threat to every industry in the society. It does prohibit or compel, take or give money and selectively hurt or help a vast number of industries. The two widely held alternate views about industry regulation (Stigler, 1971) are:

- That regulation is instituted primarily for the protection and benefit of the public at large or for some large subclass of the public. The regulation that hurts the public in this view is the costs of some social goal e.g. when oil import quotas increased the cost of petroleum products to America increased by $5 billion or more a year.
- That the political process defies rational explanation (Politics is unpredictable and constantly shifting mixture of forces that are most diverse in nature) i.e. the emancipation of slaves.

2.5 Service Quality Regulation

There are three regulatory components of economic regulation namely, drinking water quality, level of service quality and environmental quality. The first and the last do not directly concern service quality regulation and would not be discussed in details. More attention should be paid to the regulation of service quality by regulators because, quality regulation is important where there is market failure and more complex to regulate than price regulation because it has many dimensions (Baker & Tremolet, 2000; Milne, 1997). While Kahn (1988) argues that greater concentration on price than on quality is a reflection of the severe limitations of

regulation as an institution of social control of industry, instruments for quality regulation must be selected according to the type of market failure they intend to correct; in many cases differentiated quality may allow the poor to be better served (Baker & Tremolet, 2000). The main purpose of economic regulation as mentioned in section 2.4 is to protect customers (consumers) from monopolistic exploitation through excessive charges, but customers can be exploited as much just by giving them poor and unsafe services. Another purpose of regulation is to prevent destructive competition among seller (service providers)e.g. where a lower price is offered for a low quality product; but sellers or service providers can destructively compete in offering better or more services for the same price (the same service at a lower price). Kahn (1988) argued that price has no meaning except it is calculated in terms of an assumed quality of product and services. Hitherto, price is a ratio of money as the numerator, and some (physical unit) given or assumed quality and quantity as denominator, i.e. price divided by assumed quality and quantity of product. The nature of dependence on public utility services (Monopoly) is typically such that customers may correctly be more interested in the denominator than in the numerator (In terms of reliability, continuity and safety of service) than the price they have to pay.

2.6 Service Quality

There has been a great deal of discussion and disagreement in the literature about the definition of quality. However, scholars generally agreed that service quality is based on customer's expectation and perception of the service experience (Valerie and Parasuraman, 2004; Gronroos, 1982; Asubonteng et al, 1996; Cronin and Taylor, 1994). Quality has been defined by several authors; but the dimensions of quality differ across organisations in the various industries due to the main difference between product and services (Barrett, 2004; Parasuraman et al, 1990; Parasuraman et al, 1991). For the purpose of this study, quality of service is the standard degree of excellence of products and services expected from a service provider by customers, measured against their perception. Parasuraman et al. (1985) who are uniquely qualified to offer an existing and new knowledge in this area as pioneers of SERVQUAL model suggested three underlying themes after reviewing the previous writings on services (1985; 1988):

1. Service quality is more difficult for the consumer to evaluate than goods quality.

2. Service quality perceptions result from a comparison of consumer expectations with actual service performance, and

3. Quality evaluations are not made solely on the outcome of service; they also involve evaluations of the process of service delivery.

Parasuraman *et al.* (1988) defined perceived service quality as “global judgment, or attitude, relating to the superiority of the service”. The literature distinguishes between the technical aspects of service delivery and the consumer’s experience of service delivery (Zeithaml, 1988). Gronroos (1983) introduced the terms technical quality and functional quality to refer to this distinction. The technical quality of services basically refers to whether the service does what it is supposed to and can be measured by conforming to engineering based specifications. Variances in technical quality can be detected by those with technical expertise, which makes it hard for non-experts to judge technical quality (Deming, 1986; Crosby, 1986). Non-technical or functional quality refers to the service user’s definition of quality, which is a more subjective concept. In an increasing number of countries attention is being focused on the quality of public services as measured by customer’s satisfaction (Myers and Lacey, 1996). Service quality can be defined as the difference between what customers’ expect for service performance preceding the service encounter and their perceptions of the service experienced during the encounter.

In service quality theory, customers’ expectations act as the bottom line on which service quality will be evaluated by customers, hence Oliver (1980) posits that customers would be in a better position to determine whether quality of service is low if performance does not meet their expectations and performance exceeds expectation when quality increases. Some simplified service quality definitions of authors, have been selected in table 2.2 below.

Table 2.2: Selected Service Quality Definitions

	Author (year)	Definition
1.	Gronroos (1984)	Outcome of an evaluation process, where the consumer compares his/her expectations with the service he/she perceives he/she has received.
2.	Parasuraman et al. (1988)	Comparison between customer expectations and perceptions of service.
3.	Bitner et al. (1990)	Consumer's overall impression of relative inferiority/superiority of the organization and its services.
4.	Asubonteng et al. (1996)	Difference between customer's expectations for service performance prior to the service encounter and their perceptions of the service received.
5.	Zeithaml & Bitner (2003)	Service quality is a focused evaluation that reflects the customer's perception of specific dimensions of service: reliability, responsiveness, assurance, empathy, tangibles. Satisfaction, on other hand, is more inclusive: it is influenced by perceptions of service quality, product quality, and price as well as situational factors and personal factors.

As service quality increases, so will customer satisfaction with the service and (loyalty) with intentions to reuse the service increase. Drawing from the work of Gronroos (1983) and Lehtinen and Lehtinen (1982) concerning the dimensions of service quality, Swartz and Brown (1989) highlighted some distinctions between different opinions on service quality. What the service provider delivers is evaluated after performance (Swartz and Brown, 1989). This dimension is called outcome quality by Parasuraman *et al.* (1985), technical quality by Gronroos (1983), and physical quality by Lehtinen and Lehtinen (1982). How the service is delivered is evaluated during delivery (Swartz and Brown, 1989). This dimension is called process quality by Parasuraman *et al.* (1985), functional quality by Gronroos (1983); and interactive quality by Lehtinen and Lehtinen (1982). The "what" (physical, technical, and outcome quality) are difficult to evaluate for any service.

2.6.1 Attributes of Service Quality

When consumers purchase services, they are purchasing a service with a number of different attributes (Meyrick, 2002). The most obvious of these is having water supply

at the place and the time it is needed. However, there are other attributes (dimensions) that make up the product purchased and service quality level received. Meyrick (2002) enumerate them as:

- Reliability of supply available (This is determined by the number of interruptions suffered and the duration of any interruptions).
- The technical characteristics of the supply and their variability (Adequate pressure, Colour, taste and smell) and
- Customer service (Timeliness and responsiveness of the supplier to requests for services and the accuracy of billing).

In addition to these direct attributes affecting their own consumption, some customers may be willing to pay a contribution towards societal goals such as the achieving environmental objectives and ensuring public safety. Baker & Tremolet (2000), however states that the quality of infrastructure services can be assessed over a number of phases, which include: production phase (at the treatment plant); product/service delivery phase (during water distribution between the treatment plant and the delivery) and customer relations phase (during and after delivery to the customer).

2.6.2 Service Quality Dimensions

Parasuraman et al. (1988) asserts that the customer's perception of service quality offering is a function of five dimensions categorized as reliability, assurance, tangibles, empathy, and responsiveness (RATER) and suggested SERVQUAL (a service quality measurement tool). Cronin and Taylor (1992) argued for "Performance only" measurement of service quality and proposed a service quality measurement tool called SERVPERF. Teas (1993) on his part argued for the measurement of expectations, and presented the Normed Quality and Evaluated Performance model. Dabholkar (1996) addressed the need for conducting longitudinal studies (measuring expectations prior to the service encounter). However, such studies are not very commonly reported in literature due to the long time involved in conducting such studies. There are characteristics of service quality in infrastructure delivery which is classified by as quality dimension and broken down into phases for measurement purposes (Baker & Tremolet 2000). Water services can be assessed over three phases known as production phase, product service delivery

phase and customer relation phase which are summarised as: service quality at the production phase; service quality at service delivery phase and service quality at the customer service phase. Some of the dimensions of service quality by Parasuraman (1885) as adapted in table 2.3 are used by various authors for different service applications.

2.6.3 Measuring Service Quality

To successfully measure the service quality of water service providers, quantifiable and verifiable performance indicators are required. Meyrick (2002) have suggested that verification of indicators is usually achieved by independent external scrutiny of service provider's measurement and reporting systems, while Kaufmann & Lowry (2002) posit that service quality indicators should satisfy four criteria. The four criteria are that:

- They should be related to the aspects of service that customers value;
- They should focus on monopoly services;
- Utilities should be able to affect the measured quality and that
- The indicators should not ignore pockets of service quality problems.

The most popular measure of service quality is SERVQUAL, an instrument developed by Parasuraman *et al.* (1985; 1988). Not only has research on this instrument been widely cited in the marketing literature, but also its use in industry has been quite widespread (Brown *et al.*, 1993). SERVQUAL method is a technique that can be used for performing a gap analysis of organisations' service quality needs. The best way of obtaining a better understanding of customers' needs and expectation is to ask them (Parasuraman et al. 1990). SERVQUAL is founded on the view that the customer's assessment of service quality is paramount. This assessment is conceptualized as a gap between what the customer expects by way of SERVQUAL from a class of service providers (Buttle 1996) i.e. all water utilities, and their evaluations of the performance of a particular service provider (e.g. a single water utility like Severn Trent Water). SERVQUAL is presented as a multidimensional construct. In their original formulation, Parasuraman, et al. (1985) identified ten SERVQUAL components (see table 2.3) such as: reliability; responsiveness; competence; access; courtesy; communication; credibility; security; understanding/knowing the customer and tangibles.

Table 2.3: Determinants of Service Quality

	Determinants	Definitions	Description
A	**Intangibles:**		
1	Reliability	Consistency of performance and dependency.	Accuracy of billings, record keeping & performing the service at the designated time.
2	Responsiveness	Willingness & readiness of employee to provide service	Getting back to customers in time in response to complaints.
3	Competence	Possession & demonstration of the required skills & knowledge to perform the service.	Knowledge and skills of operational & contact personnel to deliver service.
4	Access	Approachability & ease of contact.	Waiting time and flexible connection costs.
5	Courtesy	Politeness, respect, consideration & friendliness of contact staff	Respect and consideration for the customer through polite contact personnel.
6	Communication	Listening to customers & Keeping them informed in language that they can understand	Explaining the service and assuring customer of their rights should there be a problem.
7	Credibility	Trustworthiness, honesty	Company's reputation, service culture & branding.
8	Security	Freedom from risk of fraud	Abuse of personal data.
9	Understanding and knowing the Customer	Making efforts to personally know customers	Learning customer's specific needs & providing individual attention.
B	**Tangibles:**	The physical evidence	Infrastructures & appearance of employees, equipment's to be used to provide service.

Adapted from: (Parasuraman et al. 1985)

RATER model was modified from the original SERVQUAL methodology, which was used for product quality assessment; but now encompass the service industry (Parasuraman, 1988). RATER model defines 5 dimensional attributes that customers are believed to consider in their assessment of service quality (Parasuraman, 1988). These five dimensions, derived from collapsing the original ten SERVQUAL components (Reliability, Assurance, Tangibles, Empathy, and Responsiveness) have been found to be relevant to most organisations and sectors, although the importance of each dimension will vary from industry to industry. Data are collected through a sample of customers who respond to a series of questions, based on around a number of key services dimensions. Four or five numbered items are used to measure each dimension. The instrument is administered twice in different forms; expectation is measured first, while a perception is measured lastly. SERVQUAL gap can be analysed in several forms using data from SERVQUAL Questionnaire such as: Item-by-item analysis (P1 – E1, P2 – E2); Dimension-by-dimension analysis (P1 + P2 + P3 + P4/4) – (E1 + E2 + E3 + E4/4); Where P1 to P4 represents the four perception statements relating to a single dimension; E1 to E4 represents the four expectation statements relating to a single dimension; And computation of the single measure of service quality ((P1 + P2 + P3 … + P22/22) – (E1 + E2 + E3 + … + E22/22)), the so-called SERVQUAL gap(Buttle,1996).

2.6.4 Criticisms of SERVQUAL Model

The SERVQUAL instrument has received a lot of criticisms which are theoretical and operational, since it was first developed by Parasuraman, Zeithaml and Berry in 1985, despite its growing popularity. It has since undergone refinement and reassessment (Parasuraman et al, 1991). The aspects of the model that has been heavily criticised of recent (Cronin, 1994; Asubongteng et al, 1996; Burtle, 1996; Hill et al, 2007) are classified into two categories (theoretical and operational). The authors assertion that customers judgement of any organisation's service quality could be reliably measured across five standard dimensions (modified from 10 original dimensions) referred to as RATER (Parasuraman, et al, 1994) as discussed in sections 2.5.2 and 2.5.3.That it focuses on the process of service delivery, rather than the outcome of the service encounter (satisfaction); and that there is little evidence that customers can assess service quality in terms of perception minus expectation (P-E) gaps (Burtle, 1996). The major criticisms of SERVQUAL, in literature are: the methodology which it is based, the instrument scales and the use of expectations and perception

scores (Burtle, 1996; Nyeck et al, 2002, Lages and Fernandes, 2005; Hill, 2007), and how they were handled are discussed further.

Dimensions: Burtle (1996) noted that the SERVQUAL dimensions are not universal. The quality of service indicators as defined and refined by Parasuraman et al (1985; 1994 and 2004) are tailored towards the standards of countries with developed economies (Baker & Tremolet, 2003), and such standards are usually above the minimum acceptable standards of the poor in low income areas of developing countries. Also of concern is the value of service quality measures compared with the much wider measure of customer satisfaction. Most commentators (Hill et al, 2007, Kendal, 2007) prefer a much broader concept of customer satisfaction to the more restrictive measures of service quality (SERVQUAL) framework. Although SERVQUAL dimensions are in doubt, it is widely used in published and modified form to measure customer expectations and perceptions of service quality (Nyech et al, 2002).

Rather than relying on the dimensions of SERVQUAL instrument that has been tailored towards industrialised countries, an exploratory phase was carried out in which (focus group) qualitative method was used to identify many factors of importance to the customers. This was used to modify the dimensions, to be absolutely certain that the questionnaire focuses on the right issues i.e. factors most responsible for making customers satisfied or dissatisfied in low income countries (having the same socio-economic characteristics) like Nigeria. This is discussed in details in section 4.7.3 in the methodology chapter.

Instrument Scales: Burtle (1996) in a continuing debate about the advantages and disadvantages of a ten point Numerical scale over a seven point Linkert scale (Lages and Fernandes, 2005; Hill et al, 2007), such as that used in the SERVQUAL model. The numerical ten point Numeric scale is statistically suitable for monitoring and improving customer satisfaction (Hill et al, 2007). Verbal scales have only categorical or ordinal properties, severely restricting the choice of statistically valid analytical techniques. Verbal or Linkert scales are statistically invalid for carrying out inference statistics, such as determining impact coefficients of important customer requirements and correlation of satisfaction attributes. Customers also tend to stick to the middle scale to play safe when asked to choose without really thinking.

A ten point numerical scale was used with labels for anchor points was used to enable customer requirement and satisfaction mean score and priority areas for improvement should be established as discussed in section 6.7

Expectation and Perception: Cronin and Taylor (1992 and 1994) investigated the conceptualization and measurement of service quality and the relationships between service quality, consumer satisfaction, and purchase intentions; and suggest that the current operationalization of SERVQUAL confounds satisfaction and attitude. They propose performance-based and the performance-minus-expectations as an appropriate basis for use, in the measurement of service quality. They went on to propose a SERVPERVF model as an alternative method of operationalizing perceived service quality, which remain controversial because of its complex approach.

2.7 Customer Service

2.7.1 Customer

A customer is anyone who receives product or services from a provider. They can be internal or external to the organisation and are the foundation of any business. The term customer, consumer and user are used interchangeably between line managers and practitioners (Kendall, 2006). A customer can also be defined as a person who has a need and approaches an organisation to have that need met (Okoli, 2007; Kamara et al, 2002). A customer is one who pays for goods and a services (Kamara et al, 2002), while a consumer is a person who uses goods and services. The difference between a customer and consumer is that one is responsible for paying the bills of services, while the other uses the product or service with or without payment (Okoli, 2007; Hill et al, 2007). In most cases the customer is perceived to be external to the organisation, but the consideration in the delivery of customer service lies in the difference between internal and external customers. Johnston (1999) defines external customers to be persons outside the organisation and internal customers are employees who work for the same organisation and depend on each other to carry out their work. Considering the difference between internal and external customers, it has been suggested that the two types of customers cannot be treated the same way. The external customers operate in a free market economy with a choice of where to purchase their product and services, while the internal customers to some extent are captive customers. It has been suggested by Berry et

al (1988) that a relationship exists between the internal and external customers and that the impact of internal customer service on external customer service should be investigated. Specifically, the qualities of service that the internal customers receive strongly influence the quality of service the external customers receive.

2.7.2 Service

Service is the exchange between the provider and the customer that has the potential to make or break the organisation (Okoli, 2007). Service is viewed separately from product and they are distinguished by three important service dimension, which are; intangibility (customers must experience the service to really know it and can be provided in support of a tangible product); simultaneous delivery and customer participation (Involvement) (Albrecht & Zemke, 1985; Bowen & Schneider, 1988; Dall and Adam, 2004).

There is no common definition of customer service because it means different things to different people. But from the word “customer” and “service”, customer service means “going beyond what is expected in doing ordinary things in an extra ordinary way and adding value and integrity to every interaction” (Okoli, 2007). Customer service is the provision of service to customers before, during and after a purchase (Okoli, 2007; Turban, 2002). According to Turban et al. (2002), customer service is a series of activities designed to enhance the level of customer satisfaction. Its importance of customer service varies by product, industry and customer, i.e. a defective or broken merchandise can be returned and exchanged, often only with a receipt and within a specified time frame in some retail outlets. Major retail stores such as Tesco and Sainsbury’s often have a desk or counter devoted to dealing with returns, exchanges and complaints, or performing related functions at the point of sale. However in utilities, such roles are performed by customer care officers usually at a call centre in Industrialised (developed) countries like the UK or customer care offices in low income developing countries like Nigeria. Customer service may be provided by a person (e.g., sales and service representative), or by automated means called self-service. Examples of self-service are self-service check out in retail stores and Internet websites of organisations that are interactive in nature, were customers can check their accounts and pay bills. The customer experience of a product also affects the total service experience, but this is more of a product direct feature than what is included in the definition of customer service.

Writers like Kendall (2006); Carlaw & Deming (1999); Okoli (2007) defines customer service as every encounter or interaction between a customer and an organisation or its representative which results in either positive or negative perception of a customer, depending on whether the customer's expectations have been met, surpassed or disappointed. Along this line, Smith (1998) defines customer service as meeting the needs and expectations of the customer, as defined by the customer. In the context of service provision, customer service determines the effectiveness of any service provider to deliver product and services to both its internal and external customers in a manner which satisfies identified and non-identified needs, but results in a positive verbal publicity and business returns. The delivery of service is backed up by knowledgeable, capable and enthusiastic employees. Levitt (1983) further explains that the purpose of business is to find and keep customers and get existing buyers to continue to do business with the organisation, rather than its competitors. While customer service is therefore important in an organisation's quest to keep customers, the relative role of customer service can vary widely across industries, organisations and customer segments. For a better understanding of a new concept of customer service and who qualifies as a service provider from definitions, there is a focus on the customer, the service, the service provider, the service culture and the impact of the service (Okoli, 2007).

Customer service is normally an integral part of a company's customer value proposition. From the point of view of an overall sales process effort, customer service plays an important role in an organization's ability to generate income and revenue (Seldon, 1998). From that perspective, customer service should be included as part of an overall approach to systematic improvement. Some have argued (Dall and Bailine, 2004; Seldon, 1998) that the quality and level of customer service has decreased in recent years, and that this can be attributed to a lack of support or understanding at the executive and middle management levels of an organisation and or a customer service policy. Others, like (Kongton et al, 2009; Dall and Bailine, 2004), believe that providing a high level of customer service, is the only way to grow a business in these times.

2.7.3 Service Culture

Customer service culture is both the service philosophy or mission, and the operating environment that enables those policies to run (Okoli, 2007). They include those elements within the service environment that have the potential to affect the

customer and help determine the success or failure of the service encounter. Lucas (2004) reiterates that the key elements within the service culture that has the potential to affect the customer and help determine the success or failure of service encounters are the service philosophy/mission, policies and procedures, employee roles and expectations, motivators and rewards, management support, training, products and services and delivery systems. The elements of a service culture as stated by Lucas (2004) include:

- Service philosophy e.g. Organisations vision and mission statement,)
- Employees roles backed up by expectation e.g. Attitude to work/ethics
- Policies and procedures e.g. Complaint policy and handling procedure
- Management support e.g. Empowering employees by providing the right tools and working environment to function
- Product and services e.g. The right type of service needed by the customers
- Motivation and rewards e.g. Incentives to motivate workers
- Training e.g. Training and retraining to make employees effective and efficient

Myhal and Kang (2998) suggest that water utilities must have a clear cut policy, such as mission statement and customer charter backed up by complaint policy which the employees can key into, and not to implement half measures or not being sure of what to do all the time. They maintained that frontline staff should be trained and retrained from time to time systematically on customer services, both in house and outside. Training also helps caution employees from dangerous whining about their employers no matter their condition of service. In order words, it is important for employees to gaze beyond their organisation and see the bigger picture of how well or bad their services impact on their customers (Myhal and Kang, 2008) Empowering employees through written job descriptions, not just for certain responsibilities and categories would help encourage them to contribute their thoughts; while motivating and rewarding excellence, and discouraging mediocrity (Lucas, 2004). Table 2.4 highlights the old fashion approach, practiced by most public utilities that are supply driven against the empowered approach, which are practiced by reformed utilities (that are demand driven).

Table 2.4: Empowered Complaint Management Approach

Old fashioned Complaint Management	Empowered Approach
Strategy: Complaint handlers have limited authority and poor status in the company, often physically apart from the mainstream. Company viewpoint is almost always upheld. Defensive attitude towards complaints, customers cannot contact the person.	Empowered professional approach. Complaint handlers are an important part of the company. Customer satisfaction is paramount, e.g. mistakes are quickly recognized. Positive and proactive attitudes, e.g. customers are given ready access to even most senior manager if necessary.
Processes: Time-consuming resolution. Written reply to complaints. Lengthy process and systems, front-line staffs have no easy access to information.	Fast reply and simple solution. Use of telephone to speed process and personalize contact. Computerized systems and simple processes which are quickly accessed by customer-facing staff.
Analysis: Limited analysis of complaints and little other feedback from customers sought. Over-reliance on data as indication of customer satisfaction.	Complaints used to spot trends. Regular feedback sought from both customers and front-line staff to identify customer satisfaction and areas for improvement.

Source: Cook and Macaulay (1997)

Bacal (2004) reiterates that customer service culture involves a set of beliefs, values, and action options that are communicated to all members of the organization, so they can be used to guide and mould interactions and decision-making regarding customers. For employees of an organization to deliver superior service consistently, they must be instilled with the concept and spirit of customer service. The culture of customer service within an organization is created through constant education and training, while highlighting the benefits and making the employees work towards creating an environment of customer service. Lucas (2004) posits that companies lauded for their superior customer service always create a culture that supports excellence in customer service. It's not that they simply train their employees in customer service skills, but they ensure that customer service is interwoven into

everything the company does. Customer service excellence is a good, description of organizational culture and is simply accepted and becomes "*the way things are done around here"*.

The best way to understand the importance of empowered complaint management approach is to look at two companies in the competitive retail industry; in which company A has a service culture that supports excellence in customer service, and the other company's (B) service culture, is oriented towards immediate or short term monetary gain. Company A inter-weaves the idea of providing excellent customer service in everything they do and their sales staff are not paid on commission, but paid a basic salary, and thought through training, coaching, and observing management behaviour; which is more important to keep a customer happy, than to make a one-time sale.

While Company B, is much more concerned with making the sale and their staff are paid on a commission basis, and employees are encouraged to concentrate on new customers, rather than interacting with existing customers; which is not directly related to increasing short term sales. In this case, most customers will patronize Company A, even if their prices are a little higher, because they convey a sense of trustworthiness, rather than patronise company B even if their prices are cheaper.

2.7.4 Service Philosophy

As mentioned in section 2.7.3, part of the element of an organisations service culture that determine the level of customer service is the service philosophy, which include the vision and mission statement, and customer charter (Lucas 2004). A Service philosophy is an organizations values and priorities of what is important, when interacting with customers. Most companies have a service philosophy that they preach and a different one that are actually used. (e.g. a philosophy the frontline staff follow when their superiors are around and another when they're not). A great way of knowing an organizations frontline team is to find out what their personal service philosophy is. Employees, who provide the best service, are those who are most clear about their personal service philosophy; as this has everything to do with training, experience, and a professional commitment to their jobs. A customer charter is a document that outlines the service standards customers should expect across organizations or service providers which are measurable. Sohail and Cavill (2007) asserts that charters focuses on raising standards in those institutions that are clearly

failing to deliver; as they set out the technical standards for service delivery, norms for operational efficiency of the utility, and regulation for reviewing the performance of the utilities. Such standards could specify the time taken by a utility to provide a new connection, rectify a defect or replace a meter. Customer charter also contains information on how to make a complaint, time and how the complaint would be resolved. Such charters equip customers with the means of seeking individual customer redress if the service they receive is inadequate. The redress might be an apology, future improvements to service delivery or, if the shortcoming were serious enough, some form of penalty. Charters represent a 'short route' to accountability (Sohail and Cavill, 2007). The complaint policy of an organisation, which is often in the form of a manual is (discussed in section 2.7.5), is extensively covered in the customer charter.

2.7.5 Policies and Procedures

The complaint policy aims to set out a statement outlining the organisations commitment to dealing with customer's complaint (BSI, 1999; BS, 2004; ES, 2008). A complaint policy, acknowledges the importance and value of complaints and feedback; ensure that complaints are handled in line with the corporate customer service strategy and any other policy requirements; provide a clear route by which customers can raise their concerns about the service they have received; set out clear guidance to staff to assist them in answering customer enquiries and complaints; clarify staff roles and responsibilities in handling complaints; ensure that complaints are dealt with fairly, promptly and sensitively; learn from mistakes and use feedback from customers to continuously improve services and to enhance the overall image of the organisation and its employees in the eyes of the customers (BS, 1999).

The theory of propagation of discontent posits that fewer recorded voluntary complaints are a poor indicator of customer satisfaction as number of recorded complaint is not proportional to the number of dissatisfied customers (Chackrapani, 1998). It states that many organisations are lulled into complacency because they receive few customer complaints. A complaint level that would have affected 2.5 million potential customers may generate as many as 50 recorded complaints. Chackrapani (1998) illustrates that there are three stages of discontent propagation, namely; customer to management; customer to others and critical mass (common knowledge). When 10% of customers are dissatisfied, in most cases, only about 4%

of the dissatisfied customers would complain. Most of the complaints never even reach the junior management and again, only 4% of the complaints will reach top management (Chackrapani, 1998). Normally, complaints are not recorded when the complaint reach the non – management employees of the organisation. Although 10% of the customer population are dissatisfied, only 16% of the customer complaints get to the management. This shows the magnitude of the problem. Although some customers might not be forthcoming about talking to management about their dissatisfaction, they are not when it comes to talking with others about the organisation. When a customer is unhappy about the service level (quality), he or she will tell 9 or 10 people about it. If the dissatisfied 10% customers tell 10 people each, they would have talked to over100% (total population lager than the customer base) and then it becomes common knowledge (Chackrapani, 1998).

Sohail and Cavill (2007) states that just as in the private sector open and effective complaints channels and complaint handling procedures in the public sector, serves to raise levels of performance and to identify those responsible for malpractice. A system of receiving and acting upon complaints is an essential part of consumer services; utilities, line agencies and municipalities all require a system for receiving and logging complaints. For example, people can complain in writing, telephone or by paying a personal visit to an office (Sohail and Cavill, 2007). Figure 2.9 is used to illustrate an ideal model complaint handling procedure for handling minor and major complaint in an organisation, allowing tracking and resolving complaints within a reasonable time frame.

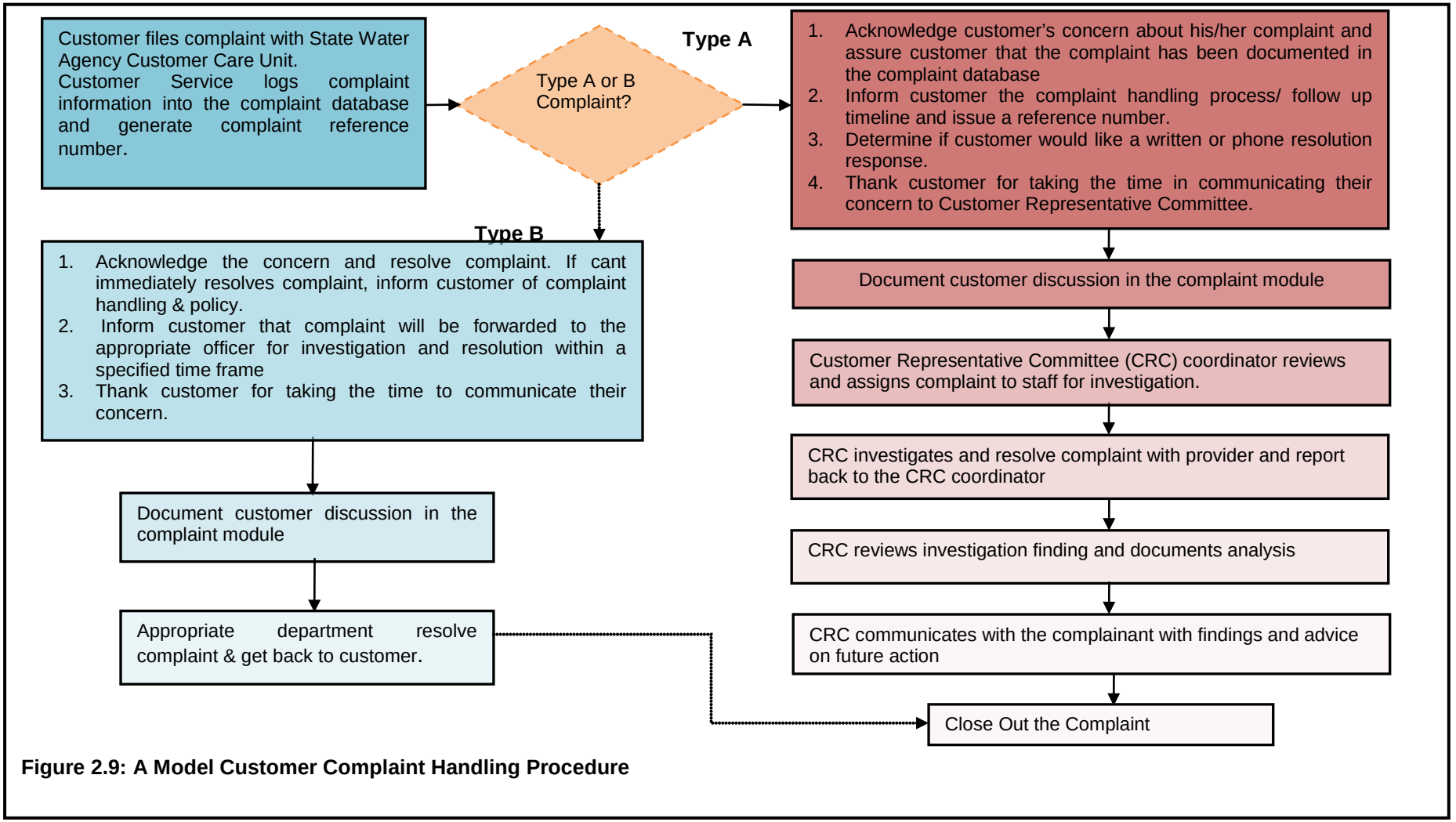

Figure 2.9: A Model Customer Complaint Handling Procedure

2.8 Customer Satisfaction

Customer Satisfaction is defined as the overall evaluation of an organisation's expectations based on the total purchase and consumption experience with products and services as a result of customer experience over time (Kendall, 2006; Parasuraman et al, 1994; Anderson et al, 1994). Brudney and England (1982) argue that satisfaction with the 'impacts' of services is significant in itself but also provides important descriptive information to policy makers, which they suggest is especially important in the absence of the market mechanisms of private ownership and competition. Satisfaction with urban services can be understood in a number of different ways. Customer satisfaction can be defined as the difference between one's expectations of service performance and an evaluation with the actual outcomes of service delivery (Cronin and Taylor, 1994). In this model, if technical performance is higher than expectations then the customer is satisfied. If performance is less than expectations then the consumer is dissatisfied. However, someone with low expectations may find low service quality exceeds expectations and so would be as satisfied as a customer with high expectations and better quality of service. Other definitions of customer satisfaction refer to the interaction between customers and employees rather than the tangible service characteristics (Zadek et al, 1997).

Customer satisfaction with service delivery in this case might relate to the interpersonal skills of service providers, such as being caring, courteous, understanding, informative, sympathetic, sensitive, communicative, credible, helpful, knowledgeable, responsive etc. (Parasuraman et al, 1985). Ultimately, reported satisfaction with services may be influenced by a multitude of background factors, only some of which will be linked to the characteristics of the service itself (Deichmann & Lall, 2003). Fuller and Matzler (2008) states that customers need to experience this Excitement Quality to be able to talk about it. Delighting customers is of prime importance as it generates that Excitement Quality essential to driving loyalty and to using customers to promote products via the 'word of mouth' mechanism. Whether they are called satisfaction, delight or excitement, the attitudes customers hold about an organisation determines their future behaviour towards it.

2.8.1 Measuring Customer Satisfaction and Loyalty

Customer satisfaction measurement is the main lead indicator of future customer's behaviour, which in turn determines the organisations profitability (Hill and Alexander, 2006). Since satisfaction precedes loyalty, customer satisfaction measurement (CSM)

is totally focussed on measuring customer's attitudes about how satisfied they are with the organisation. As satisfaction (attitude) precedes loyalty (behaviour), customer satisfaction provides more useful data for managing organisational performance. Hill et al (2007) asserts that although customer loyalty (retention) is extremely important to organisations, but it does not give organisation time to improve service because the action has already taken place. Stating further that by the time a customer has defected or chosen an alternate supplier for a related product or service, the opportunity to improve service quality to retain customer has already been missed; and so loyalty reflect what has already happened in the past, and do not provide information on what and how to improve it. Providing information on how to improve in the future is the main purpose of customer satisfaction.

To illustrate that not all satisfaction ultimately lead to loyalty, a model was devised by Noriaki Kano (1984); who defined three distinct types of qualities (see figure 2.10) as the Must-be quality, Performance quality and Excitement quality (Kano, 1984; Rust & Oliver, 2000.. Kano model (1984) offers some insight into the product attributes which are perceived to be important to customers. The purpose of the tool is to support product specification and discussion through better development team understanding. Kano's model focuses on differentiating product features, as opposed to focusing initially on customer needs. Kano also produced a methodology for mapping consumer responses to questionnaires unto his model. Berger et al, (1993); Sauerwein et al. (1996) and Randy (1999) classify these three distinct types of qualities as:

2.8.1.1 "Must-be" or Basic Quality (Zone of Defection)

Gross customer dissatisfaction results if this basic quality is unavailable, and there is a high risk of losing customers (Exiting) in a competitive market where choices are available. Being a basic expectation, it has a limited effect on customer satisfaction as it is taken for granted. This is only mentioned by customers usually when they are dissatisfied and have to make a complaint.

2.8.1.2 Performance Quality (Zone of Indifference)

This type of customer need gives rise to satisfaction on the same level with performance. Improved performance leads to increased customer satisfaction. Expectations of this sort are often the first to be mentioned by customers when quality is discussed. Satisfaction alone does not guarantee loyalty in today's rapidly

increasing markets. Companies must avoid disappointing customers as regards to the “Basic Quality” and ensure that “Performance Quality” keeps improving and is at par with or has an edge on competitors.

2.8.1.3 Excitement Quality (Zone of Affection)

This includes the attributes capable of ‘delighting’ customers and building up loyalty. The performance that customers don’t expected and didn’t even know exist or need, and once experienced, makes them really enthusiastic. This kind of service, even if it is a minor improvement in performance, has a secondary effect that is capable of generating strong growth in customer satisfaction.

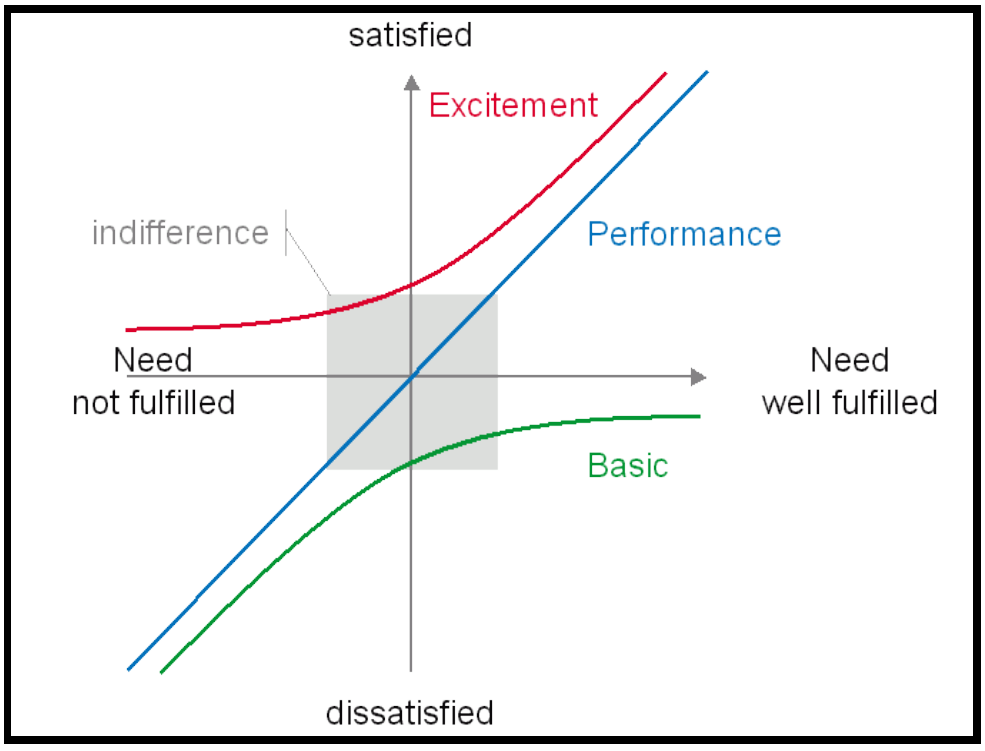

Figure 2.10: Kano Model of Customer Satisfaction

Adapted from (Berger et al, 1993)

2.8.2 Satisfaction as the Main Driver of Loyalty

Customer satisfaction is the lead indicator of that predicts future customer loyalty. Mere satisfaction is not enough; customers have to be highly satisfied. Why would a customer in the zone of indifference want to stay with a supplier other than loyalty? According to Heskett et al (2003), most organisations don’t understand the extent to which ‘very satisfied’ is more valuable than ‘satisfied’. They assert that some managers with poor understanding of the satisfaction-loyalty relationship have

expressed when they discovered customers are not always loyal. Using it as an excuse that investing in a good customer service is pointless, perhaps if they have monitored the percentage of their customers that were in the 'zone of indifference' they would have been less surprised. Hill et al (2007) agree that whilst it is true that satisfaction is not an end in itself and that 'basic' satisfied customers do defect, it is also true that customer satisfaction is the main driver of the real goal of customer loyalty. Many studies (Rust et al, 1994; Ziethaml et al, 1996; Heskett, et al, 2003) concluded that customer satisfaction was a primary determinant of loyalty, and that customers with a better perception of service quality, are more likely to remain (loyal) customers and tell other people about their experiences.

2.9 Theory of Exit, Voice and Loyalty

Exit, voice and loyalty is a theoretical concept derived from the work of Albert Hirschman (Hirschman, 1970; Withey and Cooper, 1989; Gehlbach, 2006), which elaborates on two essential options in an event of organisational or state decline (Hirschman, 1970). Hirschman (1970) hypothesized that if a firm's product and services decline in quality, customers have three alternative responses, which is known as the Exit-Voice-Loyalty trilogy. Exit occurs when customers stop buying a firms product and services, causing drop in revenue, and forcing management to correct whatever faults that led to exit; voice, when customers express their dissatisfaction, forcing management to search for causes and remedy causes of dissatisfaction; and loyalty on the other hand, reflects the attachment people have for organizations, which inevitably affects their willingness to exit or voice out their grievances. Hirschman (1970) philosophized that Individuals, business firms and organisations under any socio-economic or political system are subject to lapses that might range from efficient, virtuous, rational, law abiding or otherwise. Asserting further that functional behaviour and failures of some institutions are bound to happen, no matter how well some actors in the society live up to; and that each society learns to live with a certain amount of these failures. In order to prevent these failures from transforming into a societal decay, forces must be marshalled within the society itself to make the faltering actors revert back to the behaviour required for it to function properly.

The continuing popularity of Hirschman's book – "fourty years after publication of exit, voice and loyalty: responses to decline in firms, organisation, and states" - can be attributed to the ability of this simple model to analyse certain economic processes

which has shed light on a wide range of socio-political, economic and moral phenomena which can be translated into the traditional language of economic analysis. While Hirschman's (1970) exit, voice, and loyalty focused primarily on dissatisfaction with the performance of an organization, subsequent work addressed the application of exit and voice in diverse ways as the theory of household behaviour (Katz, 1997, Gershuny et al, 2005; Hirschman, 1978; Rogowski, 1998), trade protection (Aggarwa et al, 1987), theory of revolution (Hirschman, 1993; Pfaff & Kim 2003; Latin, 1998), political parties (Kato, 1998; Schlesinger, 1975), globalization (Schoppa, 2006), labour organization (Schoppa, 2006; Freeman & Medoff, 1984) and education (Chubb & Moe, 1988; Witte, 2001).

In principle, voice and exit are applicable to organisations in a competitive market when quality of products and service deteriorates, but exit is not always feasible in a monopoly market structure. The absence of exit options in an organisation can sharply increase the possibility of the voice option being widely and effectively taken up by its customers. While exit is known to drive out voice, voice can then be said to play an important role only in organisations that exit is not an option. Hirscman (1970 & 1978) however states that in a competitive (market) business organisations' performance relies heavily on exit (choices) and very little on voice. On the other hand where exit is unthinkable and practically impossible in a primordial human groupings such as family, tribe, church and state; the principal way of registering dissatisfaction in organisations as these is to make one's voice heard in a way. Schoppa (2006) noted that with exit either not possible or impracticable; provision is generally made in these organisations in certain circumstances for expelling or excommunicating the individual member of the human groupings or organisation. If expulsion is an instrument used in these organisations or groupings to restrict its members resorting to voice, a higher authority can be used to restrict the powers of management by prohibiting expulsion as an example to protect consumers when a public service is provided in conditions of monopoly. But then, Hirschman (1970) asserts that when exit is a wide open option and voice is largely non-existent in a relationship between a firm and its customers in a competitive market, the expulsion of customers or members is pointless and does not need to be specifically prohibited.

2.9.1 Exit

Exit is associated with the market and depends on choice in service provision and so unthinkable in a monopoly. However, as Zadek et al (1997) note, exit is unlikely to be helpful in understanding why the service has failed to meet expectations. Voice in contrast, is associated with politics, and so 'messier' (Hirschman, 1970). Voice can be expressed directly to service providers through complaints or customer consultation or by protest. The advantage of voice is that, it is a mechanism for providing information on service performance, thereby providing service providers with the opportunity to improve organisational planning and decision making (Shah, 1997). Hirschman (1970) states that the characteristic of a normal competition where firms have competitors but enjoy some liberty as price and quality market are the availability of the exit option and the frequent use of it by consumers. Exit is a costly decision, which may be prevented through an appropriate choice of policy by the leadership of an organization (Gehlbach, 2006).

2.9.2 Voice

Hirschman (1970) defines voice as an attempt by all to change, rather than to escape from, an objectionable state of affairs, whether through individual or collective petition to the management directly in charge, through appeal to a higher authority with the intention of forcing a change in management, or through various types of actions and protests, including those that are meant to mobilize public opinion. Similarly, Sohail and Cavill (2006) defined voice as a means to express service demands and relative satisfaction and dissatisfaction with service delivery. They synthesize that voice is concerned with attempts to change the state of affairs either through individual or collective action, by inviting and encouraging people outside the service provider to have a say in how or ways that services are to be provided. Hirschman (1970) asserts that those most able to use voice, the most articulate, are those who seek high quality products. These customers are most likely to leave an organisation when products decline in quality. The exit of those with the loudest voice has the potential to lead to further deterioration in the quality of the services (Shah & Wagle, 2001). Hirschman (1970) makes the observation that exit and voice operate most effectively as strategies when they are combined. On the other hand, Gehlbach (2006) sees voice as the capacity of an organization's members to participate in the setting of policy; which on the contrary can be costly, but provides a share of the surplus from avoiding exit. For exit to work as a mechanism to improve service delivery when

performance deteriorates it is necessary to have a mixture of alert and loyal customers; the alert customers provide feedback, while the inert customers provide the firm with the time and money needed to improve performance. Gehlbach (2006) further stated that customer voice is a product of demand and supply. He describes voice (in contrast to exit) an option for customers receiving poor quality of service to exert pressure on public service providers to improve their performance. How customer's voice can be heard is discussed in details in section 2.9.5.

2.9.3 Loyalty

Customer Loyalty is the preference of a customer over other acceptable products or services that are conveniently available (Kendall, 2006); a positively biased attitudinal behavioural response of the customer, towards a service provider (Bloemer et al, 1998). Loyalty, as defined by Gremler and Brown (1999) is the "degree to which a customer exhibits repeat purchasing behaviour from a service provider, possessing a positive attitudinal disposition towards the provider, and consider using only this provider when the need arises". Hong and Goo (2004) suggests that service customers, have a tendency to remain with the same service provider provided they are continually satisfied (Myhal and Kang, 2008). Similarly, Andreassen and Lindestad (1998) state that people might be loyal to a company for three reasons: high switching barriers, lack of alternatives or customer satisfaction. In Hirschman's model loyalty is ambiguous. Lowery et al (1992) however, present loyalty as both positively and negatively constructive. Positively when customers are satisfied with services or belief that service providers will sort out any problem that arise; and negatively when customers are indifferent to any situation, which can be a sign of a possible neglect of services by communities.

2.9.4 Customer Voice in Infrastructure Service Delivery

If voice is a means of expression and customers are beneficiaries of end products, customer voice can be said to be a collective means of expressing expectations (Kamara et al, 2002; Shillito, 2001), satisfaction or dissatisfaction of service rendered by public water utilities in relation to service expected (Sohail and Cavill, 2006). Thampi (2005) categorises the process of monitoring and exerting pressure to both the government and service providers for accountability and better services as "Consumer Voice" and "Client Power". He states that deficit of participation would lead to lack of meaningful space for consumers to engage in reform processes and lack of exit options and weak collective options; deficit in information leads to low

awareness on rights and entitlements, standards/norms and nature and implication of contracts; while lack of accountability leads to weak monitoring and regulation. He linked reforms on the supply side as responsive and the demand side initiative as Customer voice. Sohail and Cavill (2006), states that the three available responses to a consumer in the event of a firms product or service deteriorating in quality is to either exit by stopping the purchase of such goods and services; voice by expressing dissatisfaction or remain loyal through patronage, hoping that one day things would improve. Exit is only effective where there are alternatives in a competitive market for choices. In a monopoly of service such as public utilities, the use of voice is the only way out for a service provider to be responsive. The use of voice can be potentially dangerous to the administration of a Public-Private Partnership (PPP) contract in the provision of service delivery, if negatively used or hijacked for political reasons. Consumer bodies may become unduly reactive in responding to government agenda or programme rather than engage in dialogue and persuasion. It should see itself as partners in progress with constructive criticism rather than destructive criticism.

2.9.5 How Can Customer's Voice be Heard?

It is important to also know how service providers can capture customer's voice. The voice of the customers can be heard and strengthened through the participation of customers and making service providers directly accountable for effective delivery of infrastructure services. Depending on the business relationship (direct or indirect) and the relative size of the customers, customer's voice can be captured through the followings (Crow, 2002):

1. Direct relationship with relatively few customers which includes: Customer (Forums) Meetings; Customer Representation; Order Contract; Warranty and repair data and Requirement documents.

2. Indirect relationship with relatively many customers having distribution and retailer Interface with customers such, as public utilities includes: Customer service feedback; Customer Forums; Interviews; Focus Groups;; Surveys and Market Research

Their effectiveness of customer's voice however, depends on the sector (industry) and the geographical area (region), a lot of improvement have been recorded where customers voice have been heard. In the United Kingdom, the Consumer Consultative Council (CCCW), later known as Consumer Council for Water (CCW)

when it was independent of the Office of the Water Regulatory Authority (OFWAT) championed and represented water customers by making sure complaints are dealt with satisfactorily and within a reasonable time frame (Rouse, 2007). Water customers in the UK were able to demand for refunds for overbilling (Rouse, 2007). The Consumer Watch in India also played an active role in ensuring greater accountability from manufacturers and service providers. Consumer voices were heard through various ways such as: awareness raising and information i.e. Citizen Education in Zambia; Village Wave's Community Radio in India; lobbying to influence policy i.e. Assembly of the Poor in Thailand, Coordinator Civil in Nicaragua; Watchdog Role i.e. public hearings and surveys; mobilization and protests and through litigation (Thampi 2005).

Citizen's feedback approach is often seen as an effective means of assessing the quality of public urban service delivery and used in a collective or organised manner to demand for accountability from public service providers, especially in a monopoly where there are alternative providers. Figure 2.11 illustrates how the accountability of the service providers can be achieved through customer's voice.

THE FRAMEWORK IN PRCATICE

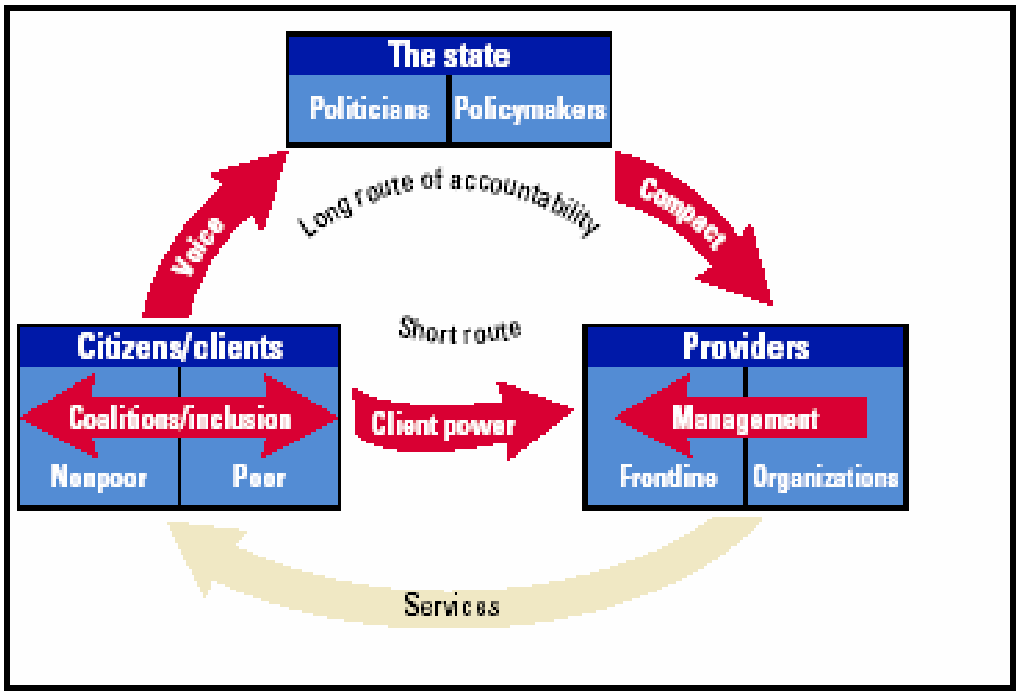

Figure 2.11: Accountability of Service Providers through Customer's Voice.

Source: Thampi, 2005

Paul (1998) cited report card and scorecard as one of the examples of organised citizens' feedback, where customers are asked to rate their satisfaction with the various aspects of service provision. Examples where report cards and scorecards have been effectively used for the evaluation of public service delivery include: India; Philippines; Ukraine; Malaysia and the United States of America (Deichmann & Lall, 2003). Scorecard initiatives have not been limited to developing countries. Most scorecards initiatives seeks to base their advocacy on practical facts as demonstrated in the form of survey information that measures the satisfaction of customers with the various aspects of public service provision, in which customers are asked to state their satisfaction level through ranking on a predetermined scale. Deichmann and Lall (2003) argue that the subjective nature of the self-evaluation of the perceived ranking may not provide a completely accurate reflection of the reality faced by customers.

The first constraint that relate to the measurement framework of scorecard initiative, is that the reported satisfaction may not equal the actual satisfaction which is not known to anyone else except the respondent. Deichman and Lall (2003) state that it would be virtually impossible to design a measurement approach that allows households to rank satisfaction unambiguously, using the same cardinal or ordinal scale. The problem is similar to that faced when analysing utilities generally, in which interpretation of such data, assumes that interpersonal comparisons of the benefits or utility derived from a given level of service is consistent. The second main limitation concerning the interpretation of scorecards responses is that the satisfaction may be influenced by a multitude of related factors only, some which will be related to the characteristics of the service itself. Other related factors such as the socio-economic characteristics of the respondent and the area, will influence perceptions about the quality of the service received.

Similarly, service providers can be responsive to the voice of the customer through: consultations on customer needs i.e. people's panel in the UK; publicizing standards and norms for service i.e. consumer charters; improving access of disadvantaged groups to grievance redress mechanisms i.e. toll free help lines; giving institutional space for consumer voices in regulatory agencies i.e. consumer consultative councils, people's advocate; empowering policies and new rights i.e. Water Act (2002) in Kenya, Right to claim financial compensation for non-compliance of service provisions. The range of measures through which voice can be expressed include

elections; free phone facilities; choice of service; one stop shops; customer oriented performance indicators; customer care centre managers; advocacy projects; suggestion boxes/forms; inspectors and customer councils. These ultimately would result to local referenda; complaints systems; report cards; legal recourse; organised demonstration and strikes; riots; quality guarantees; customer contact and focus groups as the case may be (Sohail and Cavill, 2006).

2.9.6 Voice Activation as a Function of Loyalty

A solid understanding of the conditions favouring the co-existence of exit and voice is provided with the introduction of the concept of loyalty. While customer attitudes are massively important to all organisations, since they determine customer's future behaviour, they are collectively known as loyalty. Loyalty makes exit less likely but gives more scope to voice by the same token. Hirschman (1970) asserts that loyalty makes exit less likely and resort to voice due to: the extent which customers are willing to trade off the certainty of exit against the uncertainties of an improvement in the deteriorated product or customer service, and the estimate customers have of their ability to influence the organisation.

2.9.7 Importance of Choice in a Competitive Market

Customer service is a factor that influences customers' choice of retailers, and other service providers. This aspect of customer service encompasses such factors as the level of responsiveness, friendliness, reliability, and promptness of employees (Kerin et al., 1992; Zeithaml et al., 1988). And the aspect of customer service that affects customers' choices of retailers and service providers is the manner in which the service provider (seller) responds to customer complaints (Goodwin and Ross, 1990). Many times consumers make their choices based not only on the level of service provided at the time of sale, but also on their perception of the level of customer service they can expect to receive after the sale, should a problem arise. Likewise, many consumers shop at certain retail stores - such as Tesco and B&Q - because they know that if they encounter any problems with a product the retailer will exchange the product or refund their money, with no questions asked. This aspect of customer service is critical to the long-term profitability of a firm. Firms that develop a reputation for consistently remedying customer complaints are more likely to develop customer loyalty and, over time, may increase their market share. Conversely, firms that develop a reputation for not being willing to remedy their customers' complaints may slowly lose many of their customers (Blodgett et al., 1993). While Water is a

natural monopoly, nobody holds a monopoly view of how the service should be provided. As those served have no real choice over who provides their services, service delivery should always reflect the local context of those served (Hayford, 2005).

2.9.8 Relationship of Exit, Voice and Loyalty in a Monopoly Market

Exit and voice and loyalty are three conceptually distinguishable responses to dissatisfaction where individuals or customers don't like the way things are going or when services are deteriorating in a competitive setting. Exit, voice and loyalty as responses to dissatisfaction of an organisation or society, has its root in Hirschman (1970). Hirschman (1970) argued that firms, organisations and states recover from declines through exiting (withdraw or moving away from the relationship) or voice (attempting to improve it through communication of complaint, grievance or proposal for a change); and loyalty is the reason why anyone would use voice when exit is available (Withey & Cooper, 1989). However, while both exit and voice can be used to measure a decline in an organisation, voice by character is more informative as it provides a reason for the decline; while exit alone provides the warning sign of decline in an organisation. The interplay of loyalty can however affect the cost benefit analysis of whether to use exit or voice. By understanding the relationship between exit and voice and the interplay that loyalty has with choice, organisations can develop the means to better address their customers' concerns and thereby effect improvement.

2.9.9 Improving Service Quality through Customers' Voice.

Many users of Public Utilities which are a monopoly, (granted monopoly status by the State due to economy of scale) do not have the option of exiting to alternative service provider if services are poor. During the last decade, citizen groups in a number of countries have championed the use of public feedback mechanisms to improve the performance of public sector entities. The rationale behind these efforts is that due to the monopolistic nature of public service provision and prevailing public apathy, public utilities typically lack the incentives to provide the highest possible service standards. Public disclosure of these shortcomings will exert pressure on public service providers that can lead to improvements in their performance and increase the quality of life of their customers.

Paul (1994) states that recent theory on accountability posits that accountability in public service can be enhanced by the use of "exit' and "voice" mechanisms. With exit mechanisms, customers - users of public services - can choose alternative sources of supply. He addresses that issue by investigating whether providers of irrigation services in Indonesia were more accountable when the public used voice mechanism. He focuses on how voice works and the mechanisms through which it influences accountability. He found that water user associations did make providers of irrigation services more accountable and that crop intensity increased as a result. Studies in different parts of the world have attributed successful public service outcomes to the presence of strong accountability systems and have documented the association of unsatisfactory outcomes with weak public accountability (Kanter and Summers, 1986; Herzlinger 1979; Paul 1992; Hartmark 1975). The growing evidence on this problem worldwide is a major reason why public accountability has emerged as a central issue in the governance of developing countries (World Bank 92).

Many observers share the view that new approaches to accountability need to be developed and used by countries if the efficiency and effectiveness of their public services are to be enhanced. Paul (1992, 1994, and 2002) reviewed the scope for using Hirschman's framework in the context of services - such as transport - and proposes that if the service is a private good, then property rights and exit may be more effective at improving urban services. However, if the service has public good characteristics, then voice of service users is of greater benefit at securing adequate services. According to Paul (1992), urban transport has characteristics of low to moderate economies of scale, which makes exit an option. Voice, on the other hand, is affected by high differentiability of services, low income barriers and high product involvement. He promotes the use of exit and voice by customers (service users) to discipline service providers 'from below', instead of top-down mechanisms like legal or democratic accountability. In particular, Paul (1992) established how organised public feedback in the form of report cards, can be used to challenge service providers to be more efficient and responsive to consumers. Signals from the exit or voice of service users should be picked up through 'hierarchical control' within the agency, (e.g. monitoring and incentives), which should then take corrective action in delivery. However, if hierarchical control is inadequate, service providers "may continue their 'quiet life', despite the exit or voice actions of the public" (Paul, 1992).

The World Development Report (World Bank, 2004) has developed Paul's market based approach to accountability as a way to promote pro-poor service delivery. It conceives service delivery as a relationship between providers, clients and policy makers. Accountability can be differentiated into the short route, (a contract between citizen and provider), and long route, (from citizen, to policymakers, to provider). World Bank (2004) states a preference for the short route and proposes a number of ways to give the urban poor a greater voice in service delivery. A central assumption of the report is that if the poor have a say in service delivery, either directly to service providers or via government, they would be more likely to get access to affordable and appropriate services.

2.10 Knowledge Gap

The literature reviewed has shown that Considerable research has been done on how and whether exit mechanisms improve organisation's performance and accountability (Paul, 1992, 1994, 2002; Cavill, 2004). However, little research has been done on whether voice mechanisms make service providers more accountable. Section 2.9.9 states that studies from different parts of the world have attributed successful public service outcomes to the presence of strong accountability systems and have documented the association of unsatisfactory outcomes with weak public institutions such as the case with public utilities in low income developing countries. The growing evidence on this problem worldwide is a major reason why public accountability has emerged as a central issue in the governance of developing countries. New approaches to accountability need to be developed and used by countries if the efficiency and effectiveness of their public services are to be enhanced, especially in developing countries where customer voice has been slow to develop. Exit mechanisms are viable when there is competition and users of public services can choose alternative sources of supply, but they are not viable for essential services for which government is the sole provider as in the case of a monopoly. Voice mechanisms, which are known to be an effective mechanism for communicating grievances, are the more likely option to be used when the service provider is in an officially declared monopoly. With voice mechanisms, the public seeks better performance from public service providers without opting for alternative sources of supply.

Cavill (2004) established that accountability has helped improved the outputs of urban services but it is not an effective way of achieving sustainability. Accountability

tends to be more effective at improving the technical performance of urban services than increasing customer satisfaction. In section 2.7.5, the usual measure of service quality through recorded complaint in natural monopolies is regarded by literature as inadequate. Chakrapani's (1998) theory of propagation of discontent posits that many organisations are lulled into complacency because they receive few customer complaints; however, *"voluntary complaints are poor indicators of customer dissatisfaction".* The number of complaint is not proportional to the number of dissatisfied customers. A complaint level that would have affected 2.5 million potential customers may generate as 50 recorded complaints. Most dissatisfied customers do not complain when dissatisfied with service and most complaints do not get to the senior management.

From section 2.9.5, citizen's feedback, through the use of report or score cards are often seen as an effective means of evaluating the quality of urban service delivery, where customers are asked to rate their satisfaction with the various aspect of service provision. Since the objective of the scorecards is to create public awareness as well as enhance responsiveness of service providers, it is useful to examine the extent to which such information reflects the actual quality of service delivery. The responses of customers have been found to be influenced by subjective factors and not accurately reflect the actual quality of service delivered, especially when there are no alternative providers due to regulation and natural monopolies in the deliveries of these services as cited by Shah and Wagle (2001); World Bank (2001); UMP (2000). It becomes very difficult to compare service levels across customer groups on the basis of feedback alone.

Section 2.6 of the literature reviewed shows that although service quality and customer satisfaction has been previously explored by numerous researches with varying perspectives, majority of these studies have focussed on organisations in a competitive market. Also, section 2.6.3 states that the quality requirements of infrastructure service provision are usually defined on the basis of industrialised (developed) countries standard. Such standards are usually above the minimum acceptable standards. The entire stated gaps in knowledge has shown that there is a need to developed a model framework for measuring objectively the voices of public water service customers based on the socio-economic requirements of low income areas of developing countries like Nigeria.

The research gap in knowledge necessitated the primary research question:

"How can the service quality of public water utilities in Nigeria be assessed objectively and monitored over a period of time to highlight priority areas for improvements"?

In asking this question, the author seeks to examine and understand how a customer satisfaction survey, carried out by a third party can provide a reliable indicator for monitoring the requirements and priorities of public water utility customers for improvement over a period of time.

2.11 Chapter Summary

This chapter gives an overview of infrastructure services and the role they play in the socio-economic development of a country by impacting the welfare of its citizen if efficiently managed. However, they are often characterised by inefficiency, resulting in poor service quality due to their monopoly status. When they are not efficient, it is the poor that suffers most, due to the little option available to them. Many countries have tried to help the poor through variety of options through the regulation of service quality. This chapter reviewed literature on customer service quality delivery which is the main handicap of most public utilities both in developed and developing countries because of their monopoly nature; the concept of regulation, the need to regulate and what to regulate in monopolies like public water utilities. An attempt has been made to define customer service and the types of customers and customer satisfaction. The focal theory, exit, voice and loyalty was reviewed and adapted to a monopoly context from a competitive market point of view as a conceptual model framework. Also, the characteristics and relationship between exit, voice and loyalty was discussed. The next chapter presents a conceptual framework guiding the research.

3 Conceptual Framework

3.1 Introduction

The gap in literature reviewed in chapter two shows that the performance of public water service providers in low income countries are characterised by poor service quality. Customer's voice is not heard to know their requirements and level of satisfaction in service provision. The poor service quality of urban water service providers is associated with most urban service providers that are natural monopolies. Customers of urban water service providers in low income countries do not have a voice and have no choice of who their water service providers. This chapter has combined the inter dependent concepts of customer service quality; customer satisfaction and customer voice and loyalty as a framework for assessing the service quality of water service providers in Nigeria, from the customers point of view to highlight priorities of the water utility customers for improvement.

3.2 Definition of Conceptual Framework

A conceptual framework is a tentative theory of what is being investigated. It is the system of concepts, assumptions, expectations, beliefs and theories that supports and informs a research (Miles and Huberman, 1994; Robson, 2002; Kumar, 2005). The conceptual framework is primarily a conception or model of what has been said, what is going on with it and why (Botha, 1989; Kumar, 2005; Leshem and Trafford, 2007). Shields & Hassan (2006) have identified several types of conceptual frameworks - working hypotheses, descriptive categories, practical ideal type, models of operations research and formal hypotheses - for the field of public administration. The framework is built from a set of concepts linked to a planned or existing system of methods, behaviours, functions, relationships, and objects. Shield, (1989) also explains that the frameworks are linked to particular research purposes - exploration, description, gauging, decision making and explanation/prediction. Stating further that when purpose and framework are aligned, other aspects of empirical research such as choice of methodology - survey, interviews, analysis of existing data, direct observation, focus groups etc. - and type of statistical technique become obvious.

3.3 Research Problem and Question

The research problem as stated in chapter one, is that public water utilities which are natural monopolies, are often characterised by inefficiencies which results to the provision of poor quality of service (Hall, 2006). With no option of choice of who their

service provider is, or option for the customers to exit when not satisfied with the quality of service as organisations in the competitive market, the alternative option available to the customers is to voice out their dissatisfaction. Customer's voice has been slow to develop to influence an improvement in the service quality of urban water service provision in low income countries as compared to other sectors in developed countries, (MWI, 2006). The research question that this study seeks to answer is:

> ***"How can the performance of public water utilities in Nigeria be objectively assessed in terms of service quality from the customers' point of view and highlight their priorities for improvement over a period of time"?***

The primary research question is broken down to investigate the followings:

- How do public water utility customers in Nigeria complain, when not satisfied with the service quality provided?
- What satisfaction indicator can best predict the overall satisfaction and be used to monitor the service quality of public water utilities over a period of time?
- What are the important customer requirements and the level of satisfaction of public water utility customers?
- What are the service quality gaps and the priority areas for improvement?

The answer to the research question would help this study understand how customer satisfaction can be used to assess the service quality of urban water service providers, identify the customers priorities for improvement and the most effective way of hearing customers voice in public urban water supply of low income. Section 3.4 presents the research model and hypothesis, developed to examine the research questions of this study.

3.4 Research Model and Hypothesis

A model framework is proposed for analysing the issue of service quality from the customer's perspective; in the context of urban water services in low income countries, as a solution to the poor quality of service which has been a source of concern to the general the public (customer groups and development agencies). The

dependent concepts of interest in this study as shown in Figure 3.1, based on the literature reviewed, are:

- ☐ Urban service provider
- ☐ Customers (internal and external)
- ☐ Service quality
- ☐ Customer service (Technical and functional service attributes)
- ☐ Customer satisfaction/dissatisfaction
- ☐ Customer exit, voice and
- ☐ Customer loyalty.

The urban water service provider in the conceptual framework in figure 3.1 provides water services to the customers (internal and external) through its employees, who are also classified as internal customers in the first level of the framework. This is guided by literature in section 2.6.3, that the service culture and employees impact the service quality of public service providers, which in turn affects the satisfaction of the external customers (see figure 3.1). In the second level of the framework, the service quality provided by the water service provider is determined by their expectation and service encounter (pre and after sales experience) of the customers. In an increasing number of countries attention is being focused on the quality of public services as measured objectively by customer satisfaction (Hill, 2007). In the third level, quality between the technical aspects of service delivery (known as Product quality) and the functional aspect (known as the customer experience) of service delivery is distinguishes by literature (Zeithaml, 1988; Gronroos, 1983; Cronin and Taylor, 1994). Gronroos (1983) introduced the terms technical quality and functional quality to refer to this distinction. This model framework includes the technical and functional quality of services, which basically refers to whether the service does what it's supposed to; can be measured by conformance with engineering based specifications, unlike the SERVQUAL model. Non-technical or functional quality refers to the service user's definition of quality, which is a more subjective concept (Myers and Lacey, 1996).

In the fourth level, the level of customer satisfaction can easily be used to detect the variance in the quality of service by those with non-technical expertise, such as the

customer groups and development agencies, using identified customer satisfaction indicators in section 6.5 and 6.6. In level five, customers whose expectations are not met and are dissatisfied with the level of service provided, have the option of voicing their dissatisfaction through a voice mechanism available or exit. And since physical exit is not practicable, the customers turn to an adversary of the service providers in level six. On the order hand, customers whose expectations are met and are satisfied with the service provided end up being loyal customers who promote the water service providers, also in level six.

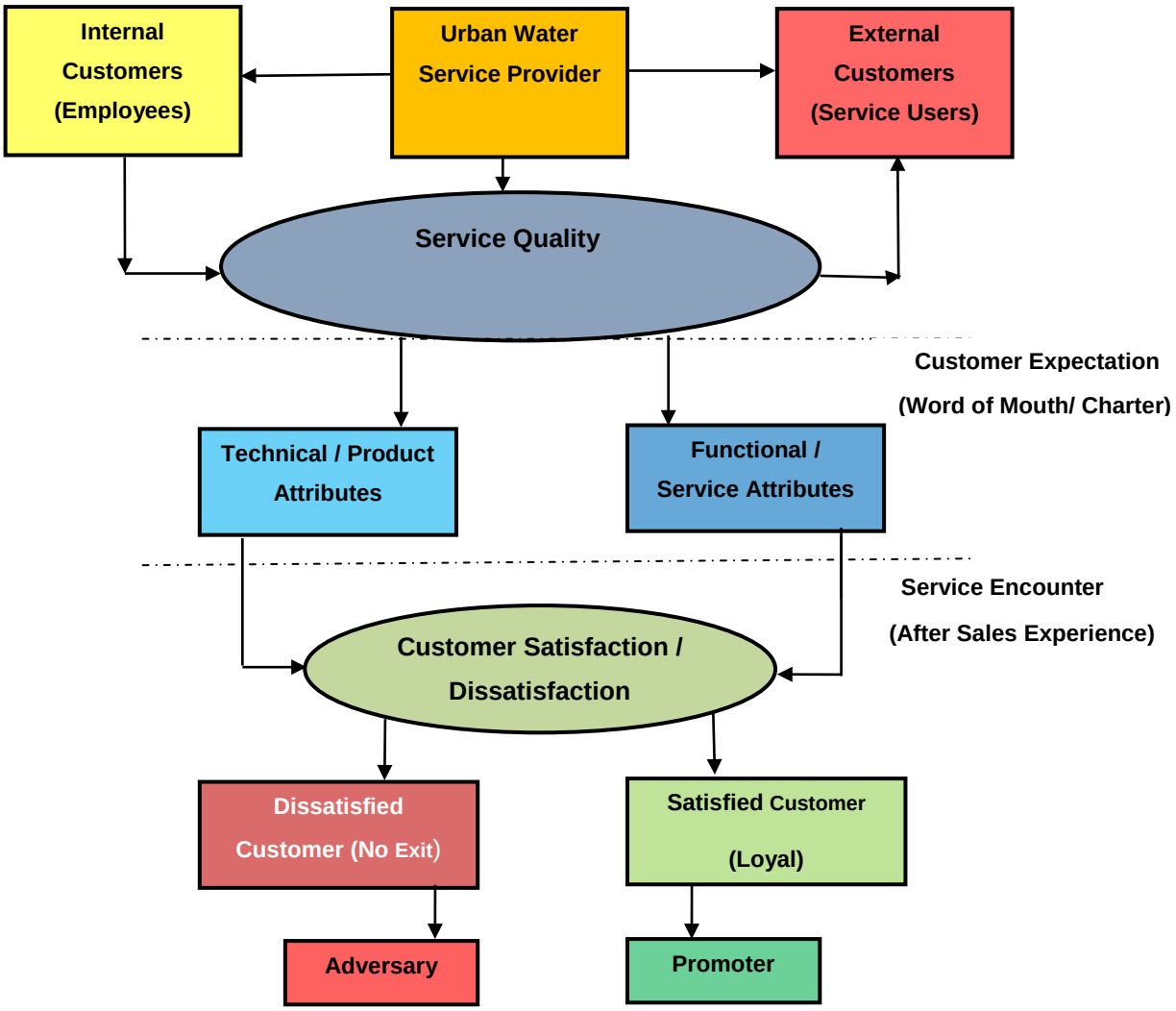

Figure 3.1: Schematic Concept of Model Framework

Also of interest is the demographic characteristic of the customers which includes:

- ☐ Service area
- ☐ Type of dwelling
- ☐ Size of household
- ☐ Gender
- ☐ Age group
- ☐ Educational level and
- ☐ Income group

The hypothesis of this study is that *"The low income Utility customers, who live in the high density area of the city and the peri-urban, are not likely to be satisfied with the quality of service provided by public water utilities;"* and that the demographic variables (which are related to each other), influence the overall satisfaction of water utility customers, especially those who reside in high density and peri-urban area of the city. It is important to determine the socio-economic characteristics of respondents to be compared with satisfaction. Using regression model, Omonona (2009) identified some factors that correlate with poverty and their influence on household; they include size of household, marital status and type of family, dwelling type, safe access to water and sanitation, gender, age and education (Omonona, 2009). The demographic and socio-economic variables are cross tabulated with overall customer satisfaction to determine the level of their influence. The concepts in the model framework are defined in section 3.4.1.

3.4.1 Defining the Model Framework

The definition of the dependent concepts adopted for analysis is outlined in table 3.1 below. The framework tabulated has moved from a distinct customer service occurrence alone, to a much wider evaluation of product and customer service quality. Customer satisfaction as defined in Table 3.2 is an attitude of a customer about an organisation, taking into consideration other alternative service available; while customer loyalty moves from attitude of a customer to the behaviour of a customer towards an organisation. Customer satisfaction includes evaluating service quality while customer loyalty is influenced by customer satisfaction. The difference

between customer satisfaction and customer loyalty is not much; at the same time what is being influenced or improved must be clearly understood. Demography is included in addition to the five concepts to determine the socio-economic characteristics of the respondents to be measured.

Table 3.1: Definitions of Conceptual Framework

	Concepts	Definitions
1	Service Quality	A global judgement or attitude relating to a particular service which takes into account the difference between customer expectation of service and perceptions of the actual service provided. The customer overall impression and cognitive judgement of the relative inferiority or superiority of the organisation and its services.
2	Customer Service	Customer service is every encounter or interaction between a customer and an organisation or its representative which results in either positive or negative perception of a customer, depending on whether the customer's expectations have been met, surpassed or disappointed. Transaction is aimed at meeting the needs and expectation of the customer.
3	Customer Satisfaction	The overall evaluation of an organisation's expectations based on the total purchase and consumption experience with products and services as a result of customer experience over time.
4	Customer Loyalty	The preference of a customer over other acceptable products or services conveniently available. A positively biased attitudinal behavioural response of the customer towards a service provider
5	Customer Voice	Change, rather than to escape from, an objectionable state of affairs, whether through individual or collective petition to the management directly in charge, through appeal to a higher authority with the intention of forcing a change in management, or through various types of actions and protests, including those that are meant to mobilize public opinion.

3.4.2 Variable Measurement

To achieve the stated primary research question, information was collected at six levels on the following key elements. They comprise demography/socio-economic; water supply and willingness to pay; billing and connection; complaint management; customer requirements and priorities; customer satisfaction and loyalty. The information solicited from household members at individual and household level is included in table 3.2. The research model framework is used to help interpret the

empirical data to be compiled during this research by evaluating the effectiveness of customer's satisfaction in assessing the service quality being provided by urban water service providers (utilities).

Table 3.2: Research Model concepts, Indicators and Variables

S/No	Concepts	Indicators and Variables
1.	**Demography:**	Service area i.e. type of dwelling; household composition; gender; age group; education and income of respondents.
2a.	**Product Service Quality:**	Characteristics of water supply i.e. the pressure and regularity of supply; physical appearance such as colour, taste and smell.
2b.	**Customer Service Quality:**	Pre and post sales service such as connection/disconnection of premises, tariff structure, billing accuracy and how often it's read and delivery, whether there are unsettled bills and why bills are not settled.
3a.	**Customer Satisfaction:**	Satisfaction or dissatisfaction with water supply service received i.e. reliability of water supply, colour and appearance, water pressure, taste and smell, safety for drinking, level of customer service provided, the ease of contacting Water Board staff, clarity and information/advice provided, time taken to respond to complaints, the way enquiries/complaint are dealt with, helpfulness and interest showed by staff as a valued customer.
3b.	**Customer Loyalty:**	If opinion about FCT Water Board has changed or unchanged, how likely would water service provider remain a chosen water service provider if given the choices, how likely water service provider would be recommended to family and friend?
4.	**Customer Voice:**	Complaint management i.e. how are complaints made if respondent have complained before, overall satisfaction with the way complaint was handled, acknowledged complaints, advice how long complaint would take to resolve, write or call to inform that complaint has been resolved, advice on right of appeal if not satisfied and provide information how complaint would be dealt with and time frame.

3.5 Chapter Summary

In this chapter, a framework for analysing the product and customer service quality of public water service providers in a monopoly of low income countries has been provided and presented schematically. The interdependent concepts have been used to analyse the deteriorating product and service quality. The concept model

framework variables were adopted as indicators to measure the service quality and customer satisfaction that suits the socio-economic condition of low income countries like Nigeria. It is hoped that a change in customer service will improve the service levels of the water service providers. The next chapter describes the approach, strategy and methods adopted in carrying out the research and the justification for using the methods.

4 Research Methodology

4.1 Introduction

Chapter four involves the development of the conceptual frame work that will be used to assess the satisfaction level of water utility customers and their priorities for improvement for monitoring the service quality provided by public water utilities in Nigeria over a period of time. The guiding theories and the classification of models was also presented and discussed. This chapter presents the research objectives which answers the research questions, followed by the research design and methodology used for data collection.

As stated in section 1.5 of chapter one, this study adopted a two phase sequential approach which involves the combination of both qualitative and quantitative research for data collection (Parasuraman et al, 1990; Hill et al, 2007). It is essential to combine both quantitative and qualitative research in service quality study; as one form of research without the other is insufficient for the purpose of service quality and customer satisfaction study. Quantitative studies are usually not rich enough to reveal all the important insights about specific facets of the service delivery process that underlie the quantitative findings. Insights gained through qualitative methods such as direct observation of service transaction, semi and structured interviews with individual customers and frontline employees and customer focus group; bring to life the numbers generated by the computer. While quantitative research gives the research manager data from which they can carry out inferential analysis, qualitative research gives the perspective and sensitivity so critical in interpreting the data and initiating improvement efforts (Parasuraman et al, 1990). Moreover, qualitative research needs to be carried out before qualitative, as it is helpful in effectively designing quantitative research (Parasuraman et al, 1988). .

To provide assurance that appropriate procedures were followed in carrying out this study, this chapter builds on the introduction as follows:

- ☐ Section 4.2 describes objectives and question;
- ☐ Section 4.3 describes the research philosophy guiding the entire design of this study and strategy;
- ☐ Section 4.4 describes the entire research design;

- Section 4.5 provides the justification for the for data collection;
- Section 4.6 describes the method for data collection;
- Section 4.7 discusses the ethical issues considered in the field during data collection;;
- Section 4.8 reports the procedures for qualitative data collection;
- Section 4.9 describes the procedures involved in carrying out questionnaire survey;
- Section 4.10 describes the procedures for data analysis;
- Section 4.11 gives a summary of the whole chapter.

4.2 Research Aim and Objectives

The aim of this study is to develop a model customer satisfaction framework for assessing the performance of public water utilities in Nigeria in terms of service quality and to identify the priority areas of service for improvement, from the customers' point of view.

To achieve this aim, the measurable objectives are:

- To find out how public water utility customers register complaints and the nature of their complaints, when dissatisfied with the quality of service received.
- To identify satisfaction indicators for predicting overall customer satisfaction for
- To identify the important customer requirements and determine the level of customer satisfaction.
- To determine the service quality gap between what customers expect and what they get and highlight priority areas for improvement.

The primary research question as mentioned in section 1.3 and 4.3 is:

> ***"How can the performance of public water utilities in Nigeria be objectively assessed in terms of service quality from the customers'***

point of view and highlight their priorities for improvement over a period of time"?

The primary research question specifically in tends to investigate the following broken down research questions:

- How do public water utility customers in Nigeria complain, when not satisfied with the service quality provided?
- What satisfaction indicator can best predict the overall satisfaction and be used to monitor the service quality of public water utilities over a period of time?
- What are the important customer requirements and the level of satisfaction of public water utility customers?
- What are the service quality gaps and the priority areas for improvement?

The research questions above have direct implications on the choice of strategy adopted in carrying out the research. Several research authors have recommended that the choice of strategy for a research should be guided by the kind of research questions (Denscombe, 2007; Yin, 2003; Silverman, 2000).

4.3 Research Philosophy and Approach

There are numerous reasons why an understanding of philosophical issues is important to research methodology. Firstly, it can help the researcher to refine and specify the research methods to be used in the study and clarify the overall research strategy to be used (Robson, 2002). This would include the type of evidence gathered and its origin; the way such evidence was interpreted and how it helps to answer research questions posed. The understanding of research philosophy secondly, would enable and assist the researcher to evaluate different methodologies and techniques; and avoid inappropriate use and unnecessary work by identifying the limitations of particular approaches at an early stage (Robson, 2002; Cresswell, 2003). And thirdly, it may help the researcher to be creative and innovative in either selection or adaptation of methods that were previously outside his or her experience (Robson, 2002; Cresswell, 2003; 2007). The understanding of research philosophy

has been explored in designing the approach adopted for this study taking into consideration the advantages and disadvantages of each of the approaches.

The two major philosophical schools of thought that are especially important perspectives for contemporary social research and used by the social scientist are Positivism and Post-Positivism (Robson, 2002). However, before the modern idea of research emerged, philosophers called research 'logical reasoning'.

4.3.1 The Positivist Paradigm

In designing this study, it has become necessary to understand the philosophies underpinning the two approaches (positivism and post-positivism) to know the category this study falls into (Descombe, 2007; Robson, 2002). Before the modern idea of social science research emerged, the positivist (inductive) view of science was the general scientific attitude of carrying out research. However, after the clarification of what is meant by the scientific method, there was a consideration of the differences between natural and social science. It includes whether it is feasible or desirable for the methods of the natural sciences to be used in applied research involving people (Robson, 2002). Experiments and surveys are examples of what is referred to as fixed research design. As the name implies, fixed design involves a laboratory or closed system in which substantial amount and pre-specification of what is to be done and how it should be done should take place before getting into the main part of the study (Anasta & MacDonald, 1994). A case for the adoption of critical realism, which is influential within the philosophy of science, rejects the traditional positivistic view of science because of its inadequacies as a description or explanation of natural or social science. However, the increasing recognition of value by all the fields calls for different approaches to social research known as the post-positivism (Robson, 2002).

4.3.2 The Post-positivist Paradigm

The post-positivist approaches are often seen as opposing and polarised views but are frequently used in conjunction in current day research (Webb, 1989: Polit et al, 2001; Robson, 2002). While the positivist philosophy is associated with quantitative research methods, the post-positivist philosophy on the other hand is associated with qualitative methods (Webb, 1989; Crossan, 2003). It is being acknowledged by Scholars such as Yin, 2009; Cresswell, 2007and Collins, 2006 that philosophically, the qualitative and quantitative paradigms are not as diverse or mutually incompatible

as often conveyed. Staunch identification of methods with paradigms may not be as accurate, or even as useful, as the trend would indicate. Therefore, an in-depth understanding of the strengths and weaknesses of both approaches and their underlying philosophy is very important. Post-positivist approaches assume that reality is multiple, subjective and mentally constructive by individuals (Robson, 2002).

Some of the basic distinctions in logic reasoning (inductive and deductive approaches) have been carried over into contemporary research. The deductive reasoning approach works from the more general to the more specific while the inductive reasoning works the other way round (Robson, 2002; Descombe, 2007). The deductive approach starts with the use of a theory, which then narrows down to observations and addresses the hypothesis which is tested with data to confirm or disconfirm the original theories. The inductive approach works from observation of patterns, hypothesis and theory formulation (Descombe, 2007). In consistent with post-positivist paradigm, this study utilized both the qualitative and quantitative methodology approach by using a deductive form of logic wherein concepts, variables and hypothesis are chosen apriori and remain fixed throughout the study (Robson, 2002; de Vaus, 2006; Denscombe, 2007). According to literature, (Parasuraman, Berry & Zeithaml, 1990; Schneider, Holcombe & White, 1997), service quality research should include qualitative and quantitative studies. While the result of qualitative research plays a major role in designing quantitative research, so it is often the first phase of research to be conducted; quantitative research can highlight specific service deficiencies for deeper qualitative probing (Hill, Roche & Allen, 2007).

4.4 Research Design

Phillips and Pugh (2005) defines research as the process of finding out something you don't know, and further states that a lot of research is concerned not with finding out something you don't know, but with finding that you don't know something. This sort of research aims to re-orientate our thinking to make us question what we think we know and focus on new aspects of our complex reality. *"A research design is a procedural plan that is adopted by the researcher to answer questions validly, objectively, accurately, and economically"* (Kumar, 1999) Before proceeding with the research design after deciding on what to study, there are some questions that needs to be answered. The answers to the questions will basically constitute the foundation of the research design. Such questions like;

- How will the study be conducted?
- What procedures will be adopted to obtain answers to the research questions?
- How will the tasks needed to complete the different components of the research process be carried out?
- What should be done and what should not be done in the process on carrying out the research?

Several definitions have been made, but the ones that gives a whole picture of what research design entails are those of Kumar, (1999); Thyer, (1993) and Kerlinger, (1986). Kumar (1999) defined research design as a detail plan that contains a blue print of how a research study is to be completely carried out. It includes an outline of what the investigator will do from writing the hypothesis - operationalizing variables so they can be measured - and collecting data to be used as a basis for testing the hypothesis; and their operational implications to the final analysis of the results. The above definition suggests that research has two main functions.

- The first function identifies and develops logical procedures, including logistical arrangements required to undertake the study (Kumar, 1999).
- The second function emphasises the importance of quality in these procedures to ensure their validity, objectivity, and accuracy (Thyer, 1993).

A schematic diagram of the research blue print illustrating the framework for the research process is shown in figure 4.1.

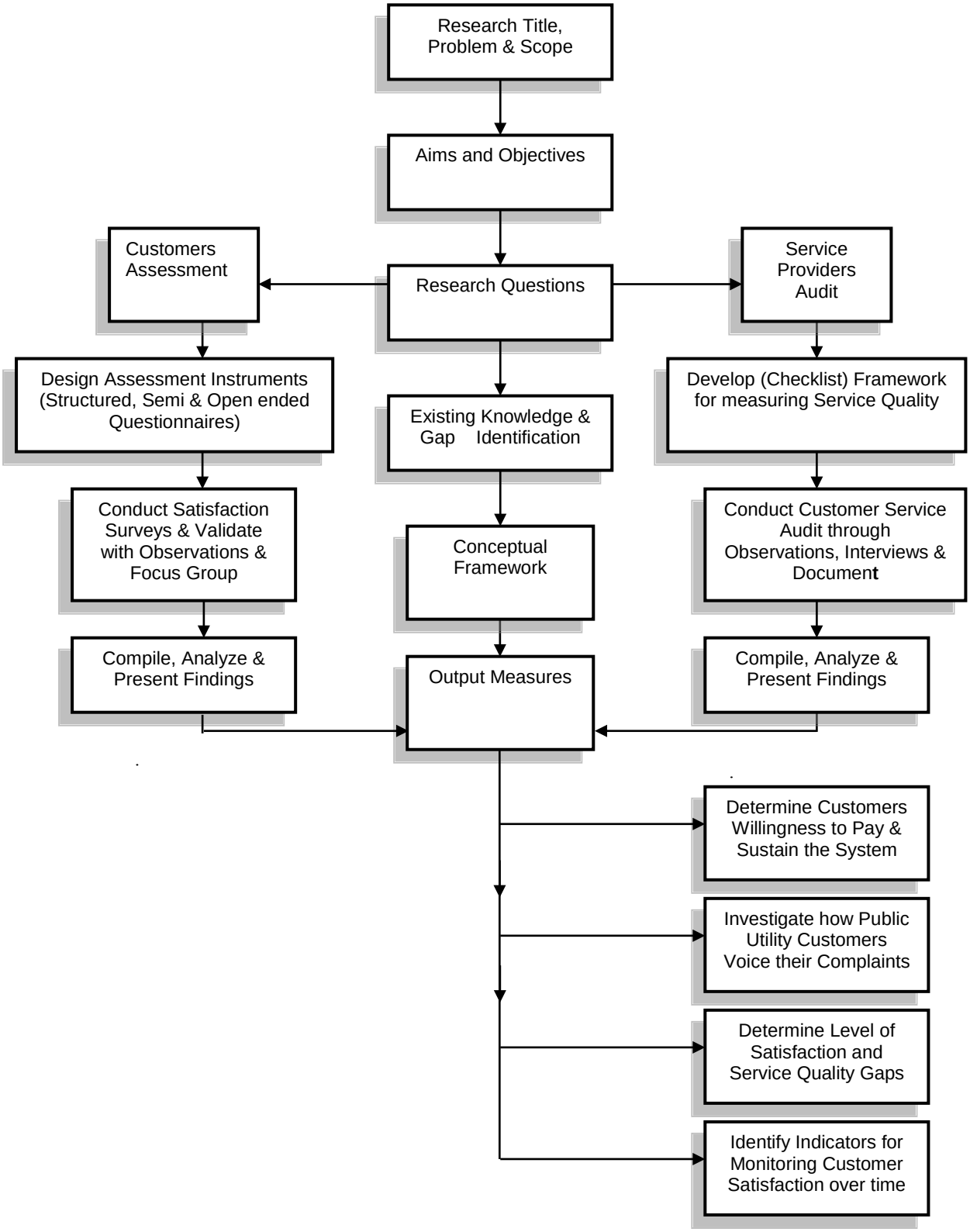

Figure 4.1: Framework of Research Process

4.4.1 Choice of Research Strategy

Denscombe (2007), Yin (2003), Silverman (2000) and Kumar (1999) agree that the 'how', 'what' and 'why' questions are very important as these two kinds of questions would determine the type of information to be collected. Phillips (2005) further states that the 'what' question is classified as intelligence gathering, as it deals with unbiased collection of information that is meticulous and summarising, to get a balanced description of the situation. It is suitable for control mechanism, policy formulation and decision making. The why questions requires good intelligence gathering, just as decision making and policy formulation does. The information is used for the purpose of developing understanding i.e. by comparison, by relating to other factors, by professing and testing the theories. All research questions have comparison in them (Yin, 2009; Phillips, 2005).

Although Denscombe (2007) enumerates that certain research strategies tend to be linked with some research methods, it is a matter of choice and the particular strength and weaknesses. Survey for instance is associated with questionnaires, while ethnography tends to be linked with observation. Beside case studies, there are many strategies for doing research including: experiments, surveys, histories, analysis of archival information, grounded theory, content analysis etc. Each strategy has its own advantages and disadvantages. The use or choice of strategy depends on three conditions:

- ☐ The type of research question;
- ☐ The control of the investigator has over the event;
- ☐ The focus on contemporary or historical phenomena (Denscombe, 2007; Yin, 2009).

Table 4.1 highlights the various strategies, type of research questions that suits them and the relationships between them.

Table 4.1: Different Research Strategies, Research Question and Relationship

Strategy	Type of research Question	Requires Control of Behavioural Events?	Focuses on Contemporary Events?
Experiment	How, Why?	Yes	Yes
Survey	Who, What, Where, How Many, How Much?	No	Yes
Archival Analysis	Who, What, Where, How Many, How Much?	No	Yes/No
History	How, Why?	No	No
Case Study	How, Why?	No	Yes

Source: Yin, 2009

4.4.2 Case Study Strategy and Justification

The case study strategy is an approach to studying a social phenomenon through a thorough analysis of an individual case (Kumar, 2005). Because water service quality is a contemporary issue and the primary research question is a 'how' question also, because the exercise of control over the phenomenon in question would not be possible. Experiment, survey, archival and historical strategy would therefore not be an appropriate strategy; the best appropriate strategy would be case study (Yin, 2009). Furthermore, case study approach provides an opportunity for the intensive analysis of many specific details often overlooked by other methods, and this approach rest on the assumption that the case being studied is typical of cases of certain type so that through intensive analysis, may be made that will be applicable to other cases of the same type (Denscombe, 2007) A case is the object of study and it is the unit of analysis about which we seek to understand and collect information as a whole (Yin, 2009). This unit of analysis may be a person, group, episode, process, community, society or any other unit of social life about whom we try to build up an understanding that is informed by the context in which the whole case exists (de Vaus, 2006). Cases could either be holistic or embedded unit of analysis, it is helpful to distinguish between cases that consist of various levels or components (Yin, 2009; de Vaus, 2006). Some cases consist of multiple level or components i.e. a water utility as a case includes technical staff, admin staff, and customers at different levels (domestic and commercial), households, institutions and community members.

Case study however, continues to be an essential and common method of social science enquiry relied upon by social scientists. The main benefit of using case study approach is that (Denscombe, 2007; Yin, 2009):

1. *It allows the researcher to deal with the delicacy and details of complex social situation:-*

   It particularly enables the researcher to grapple with relationships and social processes in a way that is denied to the survey approach. The analysis is holistic rather than based on isolated factors.

2. *It allows the use of a variety of research methods:-*

   In order to capture the complex reality under scrutiny, it may be conducted alone or in combination with other methods, all have complementary strength and weaknesses.

3. *It fosters the use of multiple sources of data:-*

   When used in parallel with multiple methods, the case study approach fosters the use of multiple sources of data, which in turn facilitates the validation of data through triangulation.

4. It can be used to contribute to knowledge of individual, group, organizational, social, political and related phenomena and its use covers conducting research for public policy and business/public administration;

5. *It is particularly suitable where the researcher has little control over events:-*

   Because the approach is concerned with investigating phenomena as they naturally occur, there is no pressure on the researcher to impose controls or to change circumstances.

6. *The case study approach can fit in well with the needs of small scale research through concentrating efforts on the research site:-*

   Conducting and analysing implementation processes and also used to document and analyse the outcomes of public or privately supported interventions (Yin, 2009), such as programmes sponsored by Federal agencies in an evaluation context.

However, the point in which case study approach is most vulnerable to criticism is in relation to the credibility of generalisations made from its findings. The case study researcher needs to be particularly careful to allay suspicions and demonstrate the extent to which the case is similar to or contrast with others of its type. Case studies are often perceived and accused of producing soft data, lacking the degree of rigour expected of social science research (Denscombe, 2007). The strategy adopted for this study is a case study approach with the use of qualitative and quantitative data collection technique.

A water utility can be conceived of at the holistic level where the characteristics of the water utility that apply to that level, is focussed on i.e. size, type of utility, location, service culture, strength and weaknesses. While there are many sublevels of elements to a water utility, a full picture of the water utility in all its complexity could only be obtained if we collect information from a wide range of the constituent elements of a larger (embedded) unit. Since many cases will consist of different elements, different methods of data collection may be required for different elements. A survey of connected water utility customers might be appropriate; observation of customer care centres and interaction between customers and frontline staff in the customer care centres might also be worthwhile, while interviews might be a good way of gaining information from employees. An analysis of the water utility records and archives could provide useful information about the historical context within which the water utility operates.

4.5 Ethical Considerations

Ethical issues are a number of key phrases that describes the system of ethical protections that the contemporary social and medical research establishment have created to try to better protect the rights of the research participants. Trochim and Donnelly (2007) classifieds the five principles as the principle of ***voluntary participation, informed consent,*** risk ***of harm, confidentiality and anonymity.*** This requires that people not be coerced into participating in research. This is especially relevant where researchers had previously relied on 'captive audiences' for their subjects i.e. prisons and universities. The Principle of informed consent is closely related to the notion of voluntary participation (Kumar, 2005; Trochim and Donnelly, 2007). Essentially, this means that prospective research participants must be fully informed about the procedures and risks involved in research and must give their consent to participate. Ethical standards also require that researchers not put

participants in a situation where they might be at risk of harm as a result of their participation. Harm can be defined as both physical and psychological. There are two standards that are applied in order to help protect the privacy of research participants. Almost all research guarantees the participant's confidentiality (Kumar, 2005).

A letter of invitation was duly written to the Federal Capital Territory Water Board (FCTWB) customers that participated in the survey, intimating them of the purpose of the survey and their consent received before the survey was carried out. The FCT Water Board customers were assured in writing that identifying information will not be made available to FCT Water Board or anyone who is not directly involved in the study. They were made to understand that the survey is independent of FCWB and it is for academic purposes, but the recommendations would be made available to the concerning authorities for service improvement purposes. That essentially means that the participant will remain anonymous throughout and after the study. Clearly, the anonymity standard is a stronger guarantee of privacy, but it is sometimes difficult to accomplish, especially in situations where participants have to be measured at multiple time points (e.g., a pre-post study).

4.6 Methods of Data Collection

There are two main approaches to information gathering in social research about a condition, problem and people (Kumar, 2005; Robson, 2002; Denscombe, 2007). The required information may be already available sometimes and only need to be extracted, but most times, the information has to be gathered. Based on these approaches, information gathering is categorised into secondary and primary data. A combination of qualitative and quantitative data was collected through primary sources which include observation, individual Interview, focus group and questionnaire. A two phased sequential qualitative and quantitative approach as illustrated in figure 4.2 was adopted in accordance to literatures (Parasuraman, Berry & Zeithaml, 1990; Schneider, Holcombe & White, 1997), which states that service quality research should include qualitative and quantitative studies.

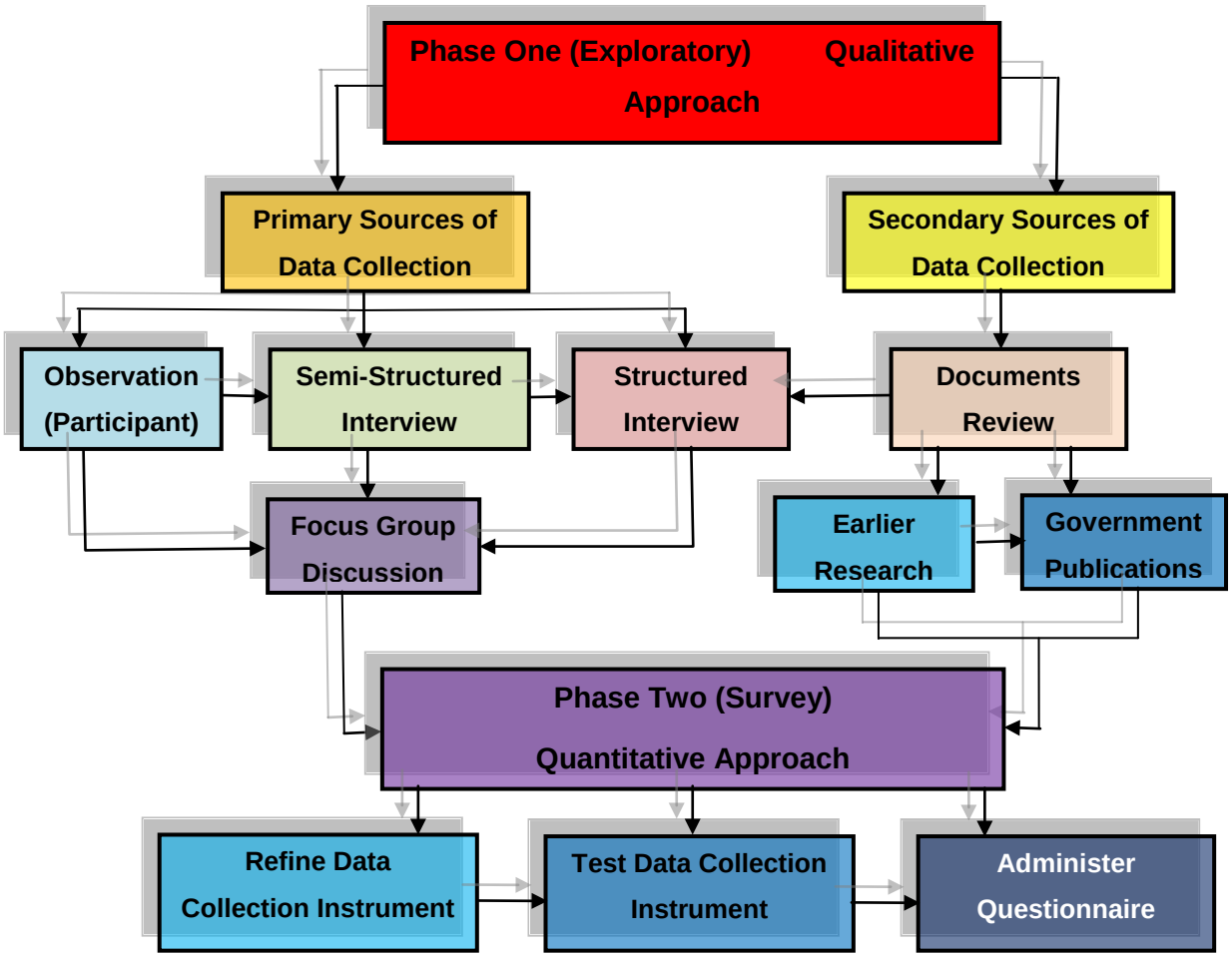

Figure 4.2: Schematic drawing of Data Collection methods adopted

The result of qualitative research (exploratory) which is the first phase, plays a major role in designing quantitative research, so it is often the first phase of research to be conducted, according to Parasuraman (1988) and Hill et al. (2007); while quantitative research can highlight specific service deficiencies for deeper qualitative probing (Hill, Roche & Allen, 2007).

4.6.1 Secondary Sources of Data Collection

Secondary sources involves document scanning of Federal Capital Territory Water Board customer data base, operation and financial summaries, national census and information from surveys of relevant published and grey literature of case studies already carried out in Nigeria and other countries. Literature review was conducted by first using online dictionaries such as Webster International and Oxford university press dictionaries were first consulted to get the definition of sustainability, service quality and regulation. Thereafter, an online literature search for journals and books

that focuses on customer service quality and voice was conducted using the Pilkington Library search engine to see what regulation is all about. 667 hits were recorded in the OPAC and Meta-Lib data bases after which 220 manageable abstracts and citations were identified. A refined search was further carried out and their abstracts and citations were reviewed to find relevant literatures from journals in data bases such as Science Direct, the World Bank and IWA. Books that were referred to were then included in the new search list and are classified in core, relevant and peripheral literatures to know what others have said and identify gaps for presentation and analysis. These literatures were then classified into three groups to form background, peripheral and core literatures.

4.6.2 Primary Sources for Data Collection

Primary sources of information collection which is the main sources of data collection includes observation, semi-structure interview, focus group, documents, questionnaire and complaint dairy as highlighted in table 4.2.

Table 4.2: Research Questions and Data Collection Procedures

Research Questions	Research Technique	Considerations
How do public water utility customers in Nigeria complain, when not satisfied with the service quality provided	• Observation • Semi-structured Interview • Focus group • Questionnaire	• How do they complain? • What is their nature of their complaints? • What options do they have if their complaint is not responded to within a time frame?
What are the service quality indicators that can be used to measure level of satisfaction of customers?	• Focus group • Questionnaire	• What are the indicators that can best predict customer satisfaction over a period of time?
What are the important requirements and the level of satisfaction of public water utility customers?	• Observation • Focus group • Questionnaire	• What are the needs of the water utility customers • What is the level of satisfaction of FCTWB customers?
What are the service quality indicators that can be used to measure level of satisfaction of customers?	• Focus group • Questionnaire	• What are the indicators that can best predict customer satisfaction over a period of time?

Observation of day to day operational activities of FCT water board with particular focus on how customers complaint is being handled was carried out; focus group discussion with selected existing customers of FCT water board; semi-structured interviews of policy makers and key government functionaries in the Federal Ministry of Agriculture and Water Resources, National Urban Water Sector Reform Project Coordinating Unit and FCT water Board employees. A Structured questionnaire was pre-tested for feedbacks from PhD colleagues and pilot studies conducted with direct community consultations in Abuja, Nigeria with existing customers of FCT water board. This was fine-tuned and administered face to face to existing customers. The data generated from the survey was used to validate the qualitative data from the exploratory phase to arrive at the conclusion and recommendation. A total of twenty nine individual interviews, two customer forums and one customer focus group interviews, observations were carried out as part of the first phase of the field work which was exploratory and involved qualitative data.

4.7 Qualitative Data Collection (Exploratory Phase)

4.7.1 Participant Observation

Observation is a way to collect primary data. It is a purposeful, systematic and selective way of watching and listening to an interaction or phenomenon as it takes place (Kumar, 2005). There are basically two kind of observation research used in the social sciences. The first is systemic observation, which has its origin on social psychology and is normally linked with the production of quantitative data and the use of statistical analysis (Kumar, 2005; Denscombe, 2007). The second, which is participant observation, is mainly associated with sociology and anthropology (Kumar, 2005; Denscombe, 2007). This method is a most appropriate method of data collection when you want to learn about the interaction in a group, study the dietary pattern of a population, ascertain the functions performed by a worker or study the personality traits of an individual Kumar, 2005). It is also appropriate where full and, or accurate information cannot be collected by questioning, because respondents either are not cooperative or are unaware of the answers because it is difficult for them to detach themselves from the interaction (Robson, 2002). It is used by researchers to gain access to situations, sometimes to understand the culture and processes of the group or groups being investigated, and it usually produces qualitative data (Denscombe, 2007). Participant observation is based on the premise that for certain purposes, it is best to observe what actually happens and not rely on

what people say they do or think (Denscombe, 2007). It offers a distinct way of collecting data by residing in the community, thereby getting the opportunity to see how things work and also collecting information informally through confidants. This would enable an opinion to be formed based on a variety of indicators (Pratt, 1992) and help identify key informants. Although participant observation is time consuming and requires documenting the data through writing as memory cannot be relied on one hundred percent, this weakness is particularly mitigated in this study by including people who already possess a solid base of cultural awareness among the research team.

Observation of day to day operational activities of Federal Capital Territory Water Board with particular focus on how a customer's complaint was being handled at customer care centres was carried to determine the nature of complaint and how complaints are responded to by the front line staffs. A technical assessment of the physical condition of Federal Capital Territory Water Board was carried out (see appendix 2) using a pre-determined water system evaluation check list and presented in the appendix table. Customer service attributes evaluation of the Federal Capital Territory Water Board management was carried out using information gathering techniques, while working with the various departments of the Board. During the fieldwork, a lot of time was spent talking informally to people (Key informants) in conversation to provide background about personalities, procedures, culture and values of their organisation and also to identify those to be interviewed. During participatory observation of Federal Capital Territory Water Board, care was taken to be discrete about what is being done so as not to distract employees from their normal activity, and so that the interaction with the employees would not make them feel uncomfortable. A pre-determined assessment check list was designed (see appendix 2) for carrying out observation and collecting information for assessing the performances of public water utilities in terms of customer service quality and complaint handling. This includes the already common operation and financial indicators and customer service indicators.

4.7.2 Semi-structured Interview

The purpose of this method was to provide the bulk of the data which is required when using case study methods. However, it serves an additional purpose when used with survey method. Jankowicz, (2005) posits that they are the means in which an initial (exploratory study) unstructured pilot study is conducted to identify the

questions to ask, the answers to provide in each category and the sequence to be followed in the main (structured) study. This involves asking semi structured questions whose content and sequence are not fully specified in advance. The technique which is open-ended uses a form of questioning in which the respondents are encouraged to answer the questions in their own words. They are used in situations in which there is a clear idea of purpose i.e. a general idea of the kind of content which you wish to explore and a rough notion of the sequence in which it will be done. This method was chosen because they are relatively unstructured and open-ended; it provides a large amount of rich, fertile data and allows for flexibility in structure. It allows both the sequence and content to vary with different respondents, in order to be sensitive to the way in which the interaction with a particular individual or group is progressing.

The design of a series of semi-structured individual interview starts with explicit statement of purpose in holding the interview (Jancowicz, 2005). By this stage the population to be dealt with would have been identified, drawn from a sample using appropriate techniques. Strata or groupings within the sample chosen are specified, to cover grounds within all the respondents and analyse results according to the sub-groupings. Thinking of the purpose of the interview as a central issue helps express a major aspect of the thesis which needs to be resolved. This major aspect or question will merit more questions to be put to the respondents. This is then listed in no particular order with the more straightforward, easy to answer, descriptive and less personal aspect dealt with at the beginning of the interview. A list of questions which is intended to be covered with the respondent, is then listed under each of the aspects mentioned, and should be ready to be flexible about the order which the questions are asked as the interview progresses. The most important thing is to remain open and sensitive to new aspects and issues offered by the respondent. Unlike the conversation technique, individual interview topic and issues to be covered have been pre-determined and the sample of people who are to be contacted. This usually will help prevent biases occurring before data collecting rather than after. Chakrapani (1998) states that only 4% of the complaints will reach top management, most of the complaints never even reach the junior management. Normally, complaints are not recorded when the complaint reaches the non – management employees of the organisation. Although 10% of the customer population are dissatisfied, only 0.16% gets to the management. This shows the magnitude of the problem.

Out of the total of twenty nine semi structured interviews conducted during the fieldwork, twenty one individual interviews were conducted at FCT Water Board (FCTWB) Abuja, the case study institution. The interviews comprises of twenty Employee Interviews (Front line and Management Staff) and one In-depth Interview with the Director (Chief Executive Officer). At Cross River State Water Board Limited (CRSWBL) Calabar, six individual interviews were conducted, which comprises of five employee interview (Front line and Management staff) and one in-depth interview with the managing Director (Chief Executive Officer). At the Federal Ministry of Agriculture and Water Resources (FMAWR) Abuja, two interviews were conducted on the National Coordinator of the National Urban Water Sector Reform Program and the Project Engineer. It would be used to understand what is going on within case study area (FCT Water Board, Abuja) and the constraints in meeting the needs and priorities of their customers. Semi - structured interview was conducted individually on frontline staff of FCTWB, CRSWB, to find out the types of complaints they receive, whether they were duly recorded and how long it takes to respond to complaints. The employees were interviewed individually to find out what type of complaint had been received, if they had been recorded and what had been done about them. Typical questions to be asked would include: Age bracket; Qualification; Income bracket; Department/Section; Status/ Nomenclature; How long in that Capacity? Schedule of work? How long have you been carrying out that responsibility? Any other added responsibility apart from main duties? Was any formal training received for the duties being carried out?; When last did you attend a training programme?; Who sponsored the training?; Was the training useful to schedule of duties?; Is there job satisfaction?; What are the challenges in carrying out functions?; What are the solutions to all problems mentioned?

Conducting individual interviews of employees, who perform the service and have the first-hand knowledge of the impediments to service, is the first step to identifying the cause of poor service quality. In most discussions on customer service, the customer is perceived to be external to the organisation. The internal customer service is an important antecedent to customer satisfaction; therefore, the only way to measure internal service quality is through employee research. After being asked some personal information questions, employees of FCT Water Board were then asked two key questions: What is the biggest problem they face day in day out while trying to deliver high quality service and; if they were the chief executive of the Board for one day and could only make one decision to improve service quality, what decision

would they make. These interviews were transcribed and archived after extracting the required information.

4.7.3 Focus Groups Interview (External customers)

The aim of using focus group at the early stages is to explore opinions, attitude and attributes to understand the perception and the needs of the customers. This helps generate qualitative data that would help bring out themes for the interview that would be conducted and lastly, questionnaire administration. Focus groups are a common method for gathering the voice of the customer through a structured group interview. It provides an opportunity to get multiple customers together to discuss their needs, evaluate concepts, and provide feedback to developers. Using it elicits a range of ideas, attitudes, experiences, and opinions held by a selected sample of participants on a defined topic. Although there are two basic type of focus groups (exploratory and experimental), exploratory focus groups are used to discuss customer needs, develop concepts for new products and/or evaluate new concepts/products. Experimental focus groups are used to observe customers using products (and learn from those observations) or to hear motivations for the purchase of a product (Crow, 2001). Exploratory focus group method has been chosen because customers' important requirements (needs) and opinion are required for generating questionnaires for the satisfaction survey. Also, because of its relatively low cost as well as the speed with the report can be obtained (if transcripts are not required, it may take only a few days).

Focus group has been used as the primary data collection method in this study because, they are commonly used in conjunction with other methods: for example, with questionnaires (Sloan, 1999). Other uses include the focus group as a precursor to the development of a more structured instrument. Hyland et al. (1994), for example, used them to help in the construction of a quality of life questionnaire. The reverse sequence is also possible, for example using focus groups to amplify and understand the findings from a survey (Evason and Whittington, 1997). Facilitating the group process requires considerable expertise and the interview process needs to be well managed or the less articulate may not share their views (Robson, 2002). Extreme views may predominate, and bias may be caused by the domination of the group by one or two people. To guide against these, focus groups requires an experienced facilitator to plan and organize the session, invite participants, and conduct the session. The sessions will typically be between one to three hours in length. The

objectives need to be clearly identified. Based on this, the facilitator should develop a presentation and a discussion guide. A facilitator that is conversant with FCT Water Board and knowledgeable in the field of service quality was appointed from the former Federal Ministry of Water Resources Staff, involved in the National Urban Water Sector Reform to moderate during the focus group sessions. The qualities of a facilitator/moderator according to Burns and Bush (1995) apart from being knowledgeable in the field are: ability to maintain control of the group without leading or influencing the participants

The pros and cons of the two approaches are presented as box 5.1. Market researchers traditionally brought together groups of strangers on the assumption that this would lead to a greater focus on the designated topic. However, this is not feasible for many real world research projects.

Box 4.1: Homogeneous or Heterogeneous Groups

Homogeneous groups

Have a common background, position or experience, which

- Facilitates communication;
- Promotes an exchange of ideas and experiences;
- Gives a sense of safety in expressing conflicts or concerns;
- May result in 'groupthink' unquestioning similarity of position or views).

Heterogeneous groups

Differ in background, position or experience, which

- Can stimulate and enrich the discussion;
- May inspire other group members to look at the topic in a different light;
- May risk power imbalances;
- Can lead to lack of respect for opinions expressed by some members;
- Can lead to a dominant participant destroying the group process.

Derived from Brown, 1999

MacDougall and Fudge (2001) provide highly practical advice on the planning and recruiting of samples for focus groups, based on a synthesis of the literature and their research experience. Complex studies can have several different focus groups. Brown (1999) describes several studies using focus groups in clinical research. Focus group technique has become popular in social research mainly because of its flexibility and relatively low cost as well as the speed with which focus group report can be obtained. Invitation letters were sent out and followed by telephone calls with assurances from participants (Customers) that they would be attending. The focus group discussion which was divided into three sessions was conducted in Abuja to

identify customers' important requirements and priorities, which is consistent with the projective technique (Hill, Roche & Allen, 2007). Two separate halls in the same hotel were booked to accommodate and make sure that the participants do not interact before it begins and refreshments provided during the break. Behaviours that constitute service quality in an organisation may not be so in another organisation, especially in public urban water supply, which is monopolistic in nature and in hospitality (restaurant) or banking industry which has a choice. This drastically changes the priorities of the quality dimensions. Each organisation must focus on the behaviours its customers regard as most important. The projective technique using the Friendly Martian is an excellent technique for getting respondents to talk through the decision process in order to get some clues about which things are important to them as a customer (See importance and satisfaction score in figure 6.58 & 6.59).

Participants was drawn from the existing FCT Water Board customer data base, identified and recruited from six segments of the FCT, based on gender (male and female), income level (the affluent and not well to do) and age (elderly and young). This is to make sure the groups are not homogeneous and have the same background, position and experience (Kim and Kang, 1995). Although having a heterogeneous group (mixture of all groups) can stimulate and enrich discussions, it can lead to a dominant participant destroying the group process. Instead, a homogeneous group would facilitate communication; promote exchange of ideas and experiences while giving a sense of safety in expressing conflicts or concerns (Robson, 2005). The groups comprised participants from all the service areas (Fern, 1982). The focus group customers were then given a sheet of paper and pen and asked to allocate scores to the listed requirements on a scale of 1 – 10 with 1 being the least important and 10 being the most important on the sheet of paper provided. The lists of requirements were then rearranged in order of importance from the highest scores to the lowest (The analysis is presented as appendix 4f and g). Prior to the focus group interview, two customer forums were organised in town hall settings on two separate occasions at different venues to allow the Director of FCT Water Board respond to random questions from customers in attendance. This is to encourage and strengthening customers' voice and foster partnership in water service delivery. Focus group discussion with FCT Water Board customers to identify customer requirements and priorities signalled the end of the first phase of the field work (exploratory research).

After a short presentation and introductions by the research coordinator, the moderator described procedures of the discussion. The session was observed by FCTWB representatives in a separate room and it was audio taped to accurately capture all of the comments and feedback from customers. Because of the small numbers involved, the participants cannot be expected to be thoroughly representative in a statistical sense of the target population of the Federal Capital territory, from which they are drawn, and findings cannot reliably be generalized beyond their number. Care was taken in selecting the participants from all the service Areas, to increase the validity of the results. The identities of the participants were not revealed before and even after the completion of the discussion. This stops them from dominating others in the process using their authority or personality, reduces pressure on them to some extent from their personal biases and minimizes the "bandwagon effect". It allows them to freely express their opinions, encourages open critique and admitting errors by revising earlier judgments. Since all the data generated from the group discussion would be qualitative and the analysis would take plenty of time, the tape recordings would be played back together with the facilitator, after each focus group is completed and listened to. The main themes, sub-themes emerging; relevant participant characteristics, key utterances or phrases used would be discussed and summarised in a brief written report in the form of a series of statement (Jankowicz, 2005). Content analysis is then used to code analyse the summaries.

4.7.4 Documents Review

Documents can be treated as a source of secondary data as an alternative to questionnaires, interviews or observation, which takes the form of pictures, sounds, records of meetings and proceedings, letters, newspapers and magazines, dairies, past PhD thesis and journal articles. The main secondary sources can be grouped into the following categories (Kumar, 2005):

- **Government Publications: -** Government organisations do gather data on a regular basis in a variety of areas and publish for the use of members of the public and interest groups i.e. the census and demographic reports, health reports, economic forecasts.
- **Research Publications:** - Enormous numbers of research studies (published and unpublished) have already been carried out by others in the form of PhD

thesis and Journals, which can provide required background information and knowledge gaps.

- **Personal Records:** - Historical and personal records written that may provide information that might be written.
- **Mass Media:** - Reports published in newspapers, magazines etc. might be another good source of data.

The advantages of documentary research includes access to a vast amount of ready-made data, it is a cost effective method of getting large scale data and, the data are easy to all to access (Denscombe, 2007). However, the disadvantages of documentary research include the credibility of the source and the format and quality in which the data might be made available (Kumar, 2005; Denscombe, 2005). Financial statements, water edict setting up FCT Water Board, water tariff and complaint policy was scanned through and copied for record purposes. These were analysed as empirical data and presented in section 5.5.3, 5.5.4 and 5.6 of chapter five.

4.8 Quantitative Data Collection Procedure (Phase Two)

Depending on the nature of research, there are many ways of collecting quantitative data, it might involve measuring output or performance on some objective criteria or rating behaviour according to a set of specified criteria and it might involve the use of scales that have been designed to operationalize some underlying construct or attributes that is not directly measurable. The procedure in this research was divided into two stages according to Parasuraman et al, (1990). The first part comprises generating variables for survey from data collected using qualitative methods and guided by literature reviewed and fine-tuned with a pilot. Conduct the second survey to assess reliability and validity of pilot findings. Models used for the study are adapted from existing work of Parasuraman et al, (1985) in marketing service quality and are supplemented by emerging from pilot study.

4.8.1 Questionnaire

Face to face administration was used on a representation of existing FCT Water Board Customers. A household questionnaire was administered face-to-face to the existing FCT water utility customers across the Federal Capital Territory (FCT) of Abuja to determine customers that have exited or about exiting physically or psychologically, complaint handling, customer satisfaction and loyalty. The socio-

economic characteristics measured includes household information of customers that might influence their views such as Gender; Age Group; Profession/Occupation; Income Bracket; Type of Dwelling/Class of Property; Rent/Ownership; Number in household etc.

4.8.2 Approaches to Questionnaire Administration

The survey approach is best suited for carrying out a quantitative research and it involves the use of questionnaires (Robson, 2002), in which responses are sought from individuals. The three main ways in which questionnaire is administered, are through self-completion, face to face and telephone interview. Table 4.3 analysis the strength and weaknesses of each technique. To achieve a high response rate in a short time and because of inefficient postal system in Nigeria, the face to face interview approach was chosen. The inefficient postal system and inaccurate post code also made the face to face interview more attractive despite the high cost attached to it.

Table 4.3: Comparison of Approaches to Survey Administration

Aspect of Survey	Self-Completion Questionnaire	Face to Face Interview	Telephone Interview
Resources Factors:			
Cost	Low	High	Low/Medium
Length of Data Collection	Long	Medium/Long	Short
Distribution of Sample	May be Wide	Must be Clustered	May be Wide
Questionnaire Issues:			
Length of Questionnaire	Short	May be Long	Medium
Complexity of Questions	Simple to Moderate	May be Complex	May be Complex
Control of Question Order	Poor	Very Good	Very Good
Open Ended Questions	Poor	Good	Fair
Use of Visual Aids	Good	Very Good	Not Usually Possible
Use of Personal Records	Very Good	Good	Fair
Rapport	Fair	Very Good	Good
Sensitive Topics	Good	Fair	Fair/Good
Data Quality Issues:			
Sampling Frame Bias	Usually Low	Low	Low
Response Rate	Difficult to Get High	Medium/Very High	Medium/High
Response Bias	Medium	Low	Low
Control of Response	Poor	Good	Fair
Quality of Response	Poor	Good	Fair

Source: (Adapted from Robson, 2007; Czaja and Blair, 1998)

4.8.3 The Survey Instruments

The survey instrument that was used in the survey process is a modified SERVQUAL version, developed by a group of researchers (Parasuraman et al, 1988), and it has been used extensively by the marketing profession for over twenty years for measuring quality of service in the service industry. This instrument has further proven to be a reliable and valid measure of service quality. It measures service quality, which represents past transactions or experiences with services, events or activities. Delivering quality service means meeting customer expectations on a consistent basis. The questionnaire was modified to suit water utilities, particularly in the developing countries after an extensive literature search of various survey instruments covering household and willingness to pay used by the World Bank assisted projects in Nigeria; customer satisfaction questionnaires in Marketing journals and Severn Trent feedback and customer satisfaction questionnaires.

Similar past PhD research (Kayaga, 2002: Mugabi, 2007) household questionnaire were also helpful.

The ability to read and understand was the key concerns, considering that the customer population (sample frame) to be surveyed in Abuja, Nigeria, have English as their second language and the majority would likely have low levels of education. For this type of survey to be successful, the question therefore, needs to be very clear and easy to respond to. Considering the fact that the survey is being conducted on a public water utility of a developing country, and SERVQUAL was designed to be used in a competitive profit oriented organizations; questions that showed little or no obvious relevance to the FCT Water Board and the services it offered were eliminated. The number of paired statements (attributes) was, consequently reduced, from the original 22 to a modified 15 items. Also, the original SERVQUAL instrument scales that included a 7 point Likert scale, where respondents were asked to rate the extent of their agreement to each statement on a scale of 1 to 7, was modified and increased to a scale of 10, based on comments from the pre-test survey carried out and literature reviewed.

4.8.4 Reliability and Validity

In choosing appropriate scales, it is necessary to be aware of reliability and validity, which can influence the quality of the data obtained and information on the method for reliability and validity should be collected and reflected in the methodology section.

4.8.4.1 Reliability:-

One of the biggest problems of customer satisfaction survey is not asking the right questions and the wording of questionnaire. In accordance with Hill (2007), who asserts that a list of the topic for the questionnaire should not be drawn from the organisations point of view, but from the lens of the customers; otherwise the questionnaire would invariably cover issues important to the company's managers, rather than those important to the customers. Focus group was organised with FCT Water Board connected customers to get their important requirements. Also, there is the danger that the questionnaire itself would bias the response through unbalanced questions or rating scales. To eliminate bias and be certain that the survey is providing a measure that accurately reflect how satisfied or dissatisfied customers feel, questions were worded as "*How satisfied or dissatisfied are you….?*", on a ten point rating scale; And multi choice questions with only the common answers listed

with category of options such as ‘others’, ‘not applicable’ or where sensible ‘don’t know.’

The perception of customers about the service rendered by FCT Water Board is required, to gauge the level of satisfaction and their priorities among the customer requirements. Because the unconnected customer’s views would distort the overall perception of the FCT Water Boards service quality, they were not included in the survey. Screening questions was used to screen out the unconnected customers from the connected customers, which is the research (survey) target. Questions like *“Are you connected to FCT Water Boards’ mains”?* It is also necessary to screen those who did not complain from those who complained when not satisfied with the quality of service.

4.8.4.2 Validity:-

Conclusion validity is undoubtedly the least considered and most understood among the four types of validity. Other types of validity include the internal, construct and external validity (Trochim and Donnelly, 2007). They posit that conclusion validity is the most important of the four validity types mentioned because it is relevant whenever a decision is to be made in ascertaining if there is a relationship in the observations made. They define it as the degree to which conclusions are reached about relationships in a data. Whenever an investigation is carried out about a relationship, there are essentially two possible conclusions of either there is a relationship or there isn’t. There may be a conclusion that there is a relationship when there is none, or infer that there isn’t a relationship when there is. This possibility has to be considered when mentioning conclusion validity. The conclusion validity shows that there is a relationship between overall satisfaction and the satisfaction attributes with correlation analysis. In accordance with Hill (2007), a statistically valid numerical scale of 1-10 was used.

4.8.5 Survey Objectives

The survey was designed to collect information needed to identify and classify customers’ needs and provide basic indicators for monitoring the satisfaction of public water utility customers. Specifically to:

- To identify the needs and priorities of the socio-economic groups of FCT Water Board connected customers.

- To measure the level of satisfaction of existing public water utility customers in the Federal Capital Territory (FCT).
- To determine the service quality gap between what customers want and what they receive.
- To determine how responsive the FCT Water Board are to customer's complaint.
- To determine how FCT Water Board customers voice out their grievances when not satisfied with the level of service provided.

4.8.6 Scope and Coverage of Survey

The survey covered the urban and peri-urban areas of the Federal Capital Territory (FCT). The FCT was divided into ten enumeration areas designated as Service Areas to cover Federal Capital Territory Water Board (FCTWB) customers. The existing customers were then classified into active and non-active customers. For the purpose of this study and to achieve the above stated objectives, information was collected at six levels on the following key elements comprising: socio-economic; water supply characteristics; billing and connection; complaint management; customer needs and priorities; customer satisfaction and loyalty. The information solicited from household members at individual and household level included:-

1. **Demography :**

   Demographic variables are questions that are an integral part of any questionnaire. They are used to identify characteristics such as: Household composition, gender, age group, education, income, average monthly expenses on utilities such as water, electricity and telephone.

   Demographic questions will help classify the difference in class between service users, where most of the customers are located, the age group they belong and the incomes level they fall into; by painting a more accurate picture of the customer groups, who use and are likely to keep using the water services.

2. Water Supply Characteristics :

This is to determine the demand and financial sustainability of the Utility. The questions mainly include how many customers use FCTWB as its: main source of water supply, how regular water is received from Water Board mains? Supplementary water source, Average cost of water supplement, WTP more for an improve water supply, maximum amount (price) they are willing to pay. This will help determine if the respondents are willing to and able to support an improvement of a reliable and sustainable water supply and classify the number of customers using FCTWB as its main and supplementary source of water supply.

3. Billing/Connection includes:

Type of connection, tariff structure, if receiving water bill and how often, whether there are unsettled bills and why bills are not settled; if premises was ever disconnected and reason for disconnection. Inaccurate billing was identified as the main reason for customers to be dissatisfied from observation in the exploratory stage of the research. The tariff structure would help classify the dominant category associated with complaint.

4. Complaint Management:

How are complaints made if respondent have complained before, overall satisfaction with the way complaint was handled, acknowledged complaints, advice how long complaint would take to resolve, write or call to inform that complaint has been resolved, advice on right of appeal if not satisfied and provide information how complaint would be dealt with and time frame. This would determine how responsive and promptness in FCTWB deals with customers complaint.

5. Customers' Needs/Importance (Priority):

Rating of requirements according to importance and priorities the followings: reliability of water supply, adequate pressure, accuracy of billing, safety of drinking water and physical appearance (colour, taste and smell); and friendliness, knowledge and courtesy of staff in dealing with request/complaints. Their ratings on a scale would help identify customer's priorities for improvement.

6. Customer Satisfaction/Loyalty:

The overall satisfaction or dissatisfaction with water supply service received and: reliability of water supply, colour, water pressure, taste and smell, level of customer service provided, the ease of contacting Water Board staff, clarity and information/advice provided, time taken to respond to complaints, the way enquiries/complaint are dealt with, helpfulness and interest showed by staff as a valued customer. If opinion about FCT Water Board has changed or unchanged, how likely would FCT Water Board remain chosen water service provider if given the choice? How likely would FCT Water Board be recommended to family and friend? And suggestions for an improved and sustainable water supply.

4.8.7 Pre- testing the Survey Instruments

The survey instruments was subjected to several stages of review from PhD research colleagues, developed and pilot tested to ascertain the quality, adequacy and usability. The pilot test is used to fine tune the survey instruments and to cross check the adequacy of field arrangements and logistics. The service quality instrument to be used is the SERQUAL MODEL developed by Parasuraman, et al (1985; 1988 & 1990) and refined, was pre-tested and feedback received for the purpose of modifying the questionnaire. The survey instrument adopted was a modification of SERVQUAL (Parasuraman et al, 1988). Content analysis of focus group interviews and pretesting of the instrument were used to determine the modifications necessary to ensure the instrument was appropriate to use in this situation given the individuality of the sample that would be completing the questionnaire.

In the original instrument, '1' indicates *strongly disagree* and '7' indicates *strongly agree* (Parasuraman et al, 1990). While the instrument was anchored by *strongly agree* on the left and *strongly disagree* on the right, no specific anchor for guidance was given as to the meaning of the other numbers within scale 1 to 7. To aid participants in the decision making process, the format of the responses was modified from a 7 point scale to a 5 point scale with a specific anchor assigned to each numbered item. Anchors were: 1—*strongly disagree*, 2—*disagree*, 3—*neither agree nor disagree*, 4—*agree*, and 5—*strongly agree, sliding from 5 to 1*.

4.8.8 Pilot Test.

To ensure that instructions, questions and scaled items are clear, there was a need to pilot test the scales with some groups; as it might be reliable with a group and totally unreliable with another group. This was also, to ensure that respondents understand the questions and respond appropriately as some questions might offend potential respondents. The pilot test covered ten connected customers in each of the service areas of one urban and one peri-urban service areas chosen in the FCT respectively; this includes Garki and Kubwa, which has the largest connected customers. This was followed with the analyses of the sample frame to get a reliable sample size, after which enumerators were recruited and trained, and followed by the main survey.

4.9 Sample Design.

Usually, the population is too large for the researcher to attempt to survey all of its members. A small, but carefully chosen sample can be used to represent the population. The sample reflects the characteristics of the population from which it is drawn. According to Barlett et al (2001), the process of conducting a poll is divided into three sequential stages which includes;

- Selecting a primary sampling unit
- Conducting the interview
- Interpreting the result

Choosing or designing a sample method will enable the views of the target population to be represented by those sampled. In survey, the two statistical sampling methods commonly used are the probability and non-probability sampling. In probability sampling, each member of the population has a known non-zero probability of being selected, and they include; random sampling, systematic sampling, and stratified sampling. In non-probability sampling, respondents are selected from the population in some non-random manner, and these include: convenience sampling, judgment sampling, quota sampling, and snowball sampling. The advantage of probability sampling is that sampling error, which is the degree to which a sample might differ from the population, can be calculated. When inferring to the population, results are reported plus or minus the sampling error while in non-probability sampling, the degree to which the sample differs from the population remains unknown (Barlett et al, 2001). Stratified random sampling method was

chosen because random sampling is the purest form of probability sampling and each member of the population has an equal and known chance of being selected. And the stratified sampling is commonly used probability method because it reduces sampling error.

4.9.1 Determining the Sample Size

The sample size of the survey was determined by analysing the sample frame (see table 4.4) based on the proportion of the total connected customers. The sample size is based on a 95% confidence level with a sampling error margin of + or -3%. From calculation, the required sample size to achieve accuracy and level of confidence of 95%, with a sampling error of 3% is equals **n**. For a survey design based on a simple random sample (UNICEF, 1995; Barlett et al, 2001), the sample size required can be calculated according to the following formula (Barlett et al, 2001):

$$\mathbf{n} = \frac{\mathbf{t^2} \times \mathbf{p(1-p)}}{\mathbf{m^2}}$$

Where:

n = required sample size

t = confidence level at 95% (having a standard deviation value of 1.96)

p = estimated prevalence of population in the project area

m = margin of error at 3% (having a standard deviation value of 0.03)

$$\mathbf{n} = \frac{\mathbf{(1.96)^2 \times 0.57(1 - 0.57)}}{\mathbf{(0.03)^2}} \quad \textbf{---------- (i)}$$

$$\mathbf{n} = \frac{\mathbf{3.8416 \times 0.57 \times 0.43}}{\mathbf{0.0009}}$$

Sample size (n) = 1045

The breakdown of the distribution spread is based on the percentage of each service area to the overall sample frame as shown in table 4.4 below in an alphabetic order. The questionnaire was designed to be administered face to face to the existing and

active customers of FCT Water Board in all the ten service area. An estimate of connected customers was first collected from the commercial department of the Boards' headquarters in Abuja. The second stage involved visiting the Service Area Offices to interview the Area Managers of all the ten service areas to ascertain the peculiar problems on ground and determine the total number of active and non-active customers connected to in the various service areas of FCT Water Board.

Table 4.4: Sample Profile of connected FCTWB Customers

Service Area (Sample Frame)	Connections (All Categories)	Sample Frame (Active Accounts)	Sample Size (%)	Sample Size (N)
Asokoro	2876	1356	4.55	47.55
Buari	219	219	0.73	7.63
Garki	5474	4900	16.43	171.69
Gudu	2171	1278	4.29	44.83
Gwagwalada	1500	1500	5.03	52.56
Jabi	1501	2252	7.55	78.90
Karu/Nyaya	2500	2500	8.38	87.57
Kubwa	7134	7134	23.93	250.06
Maitama/Wuse II	4149	4106	13.77	143.90
Wuse I	4572	4572	15.33	160.20
Total	**32484**	**29817**	**99.99**	**1044.89**

This is to get an accurate number that formed the sample frame. An accurate figure of 32, 484 active connected customers, comprising all categories was determined from their records.

4.9.2 Training

Two day training was organised for four recruited enumeration officers drawn from the residents of the service areas of the Federal Capital Territory. The training covered general advice on face to face interview with regards to appearance and dress, approach that would make the respondents comfortable, recording of answers

to open ended response questions for later coding and how to allow only standard alternatives to fixed alternative response questions. After practicing for two days, enough confidence and familiarity with questionnaire wordings was achieved. A team leader was also appointed that would monitor enumeration officers and ensure quality implementation of the survey. The composition of the enumeration officers includes two male and two females, which was later split into two teams. The essence of making sure each team consist of a male and a female was due to the cultural diversity of the households which include respondents from the northern part of the country which are predominantly Muslims and cannot be interviewed by a male.

4.9.3 Sample Achieved

A sample size of 1,045 stratified randomly selected households from a sample frame representing the ten service areas was covered by 4 enumerators divided into two teams (comprising of a male and a female each) and a team leader over a period of three weeks. An 80% maximum and a 57% minimum response rate were anticipated with the use of face to face questionnaire survey within a four week period. Unfortunately, due to cases of respondents not being at home and refusal to participate, some households could not be located as anticipated, even with the assistance of FCT Water Board bill distributors. This reduced the maximum response rate of the total sample size from 80% to about 62%. The team leader prior to the visit of the enumerators identified and gave out letters with the aid of the FCT Water Board bill distributors to the randomly selected households. This is intended to make them interested by creating awareness, increase response rate of questionnaire while finding out when the head of the household or the spouse would be available. On the survey day, the team leader identified the households that would be interviewed and collected the completed questionnaire at the end of each day for quality control purposes. A diary of daily activities and the number of questionnaire given out to each enumerator and the returned administered questionnaire was recorded in table 4.5.

4.9.4 Quality Control

For quality control purposes, a number of quality control measures were put in place to ensure that the data were of good and acceptable quality. The enumerators were required to work in two's for security purposes and also observe each other while administering the questionnaire to the respondents. It might be difficult to concentrate with asking the respondents questions and filling in the responses at the same time

without omitting or making mistakes. The team leader confirmed pre-selected households, observes interviews and verified completed questionnaires. At the start of each survey day, all the field officers meet to evaluate the previous day's work by comparing notes and make clear any ambiguity noticed. The retrieval of completed questionnaire was done on a daily basis to avoid doctoring already completed questionnaires by the enumerators; the total number of retrieved questionnaire must match with the pre-selected household in the master sample list.

Table 4.5: Activity Diary of Survey from 27/04/09 – 02/06/09

Date	Questionnaires		Activity	Service Area
	Distributed	Achieved		
27/04/2009-01/06/2009	1045		Distribution of Letter of Invitation sent to Participants.	All Service Area
27/04/2009-02/05/2009	4 Enumerators	4	Recruitment of Enumerators	-
04/05/2009 -08/05/2009	4 Enumerators	4	Training of Enumerators	-
09/05/2009-14/05/2009	250	162	Distribution of Questionnaires	Kubwa
15/05/2009	7	6	Distribution of Questionnaires	Buari
16/05/2009	87	34	Distribution of Questionnaires	Karu/Nyanya
16/05/2009	47	30	Distribution of Questionnaires	Asokoro
18/05/2009-20/05/2009	143	123	Distribution of Questionnaires	Maitama/Wuse II
21/05/2009-23/05/2009	160	108	Distribution of Questionnaires	Wuse I
25/05/2009	52	30	Distribution of Questionnaires	Gwagwalada
26/05/2009	45	30	Distribution of Questionnaires	Gudu
26/05/2009-29/05/2009	171	92	Distribution of Questionnaires	Garki
30/05/2009-01/06/2009	78	34	Distribution of Questionnaires	Jabi
02/06/2009	1045	649	Evaluation & Repeat Visits	All Service Areas

4.10 Data Analysis

The quantitative data collected from field work were processed and analysed using SPSS 16 and 17 analysis tools. Strauss (1987) argues that the distinction between quantitative and qualitative is in how data are treated analytically rather than the research methods. As discussed in section 4.3.3, this study utilised quantitative technique in analysing primary and secondary data collected. The process of data analysis follows a process involving five stages in relation to quantitative data. The quantitative approach tends to shape their data more consciously and explicitly in their early stages compared to qualitative approaches. The five stages are: data preparation; Initial exploration of the data; analysis of the data; representation and display of the data (Denscombe, 2007). The five stages of data analysis are as follows:

- Data preparation involved coding which normally takes place before data collection, categorization of the data and checking the data.
- Initial exploration of data involved looking for obvious trends or correlations.
- Analysing the data using statistical test i.e. descriptive statistics, factor analysis and cluster analysis linked to the research questions or hypotheses.
- Representation and display of the data such as tables, figures, graphs, bar and pie chart and written interpretation of the statistical findings.
- And validation of the data using external benchmarks, internal consistency and comparison with alternate explanations

Sources of quantitative data include questionnaires (answers to close ended questions), focus group (customers' requirements), observation (observed pre-determined assessment checklist) and documents (Business data i.e. complaints log record and statistics of coverage and revenue profile). (Creswell & Plano Clarke, 2007).

4.11 Chapter Summary

This chapter describes the research approach, strategy and methods for data collection for testing the hypothesis and the research questions; use of quantitative approach and the justification for adopting the approach. The main justification for adopting qualitative and quantitative methods of data collection, is because it is

essential to combine quantitative and qualitative service quality research; one form of research without the other is insufficient as quantitative method is usually not rich enough to reveal all the important insights about specific facets of the customer service delivery process that underlie the quantitative findings. Moreover, qualitative (exploratory) studies can be helpful in effectively designing quantitative studies; hence, qualitative research is carried out before quantitative research. While quantitative studies gave the data from which there are broad inferences, qualitative research gave the perspective and sensitivity that was critical in interpreting the data and priority areas for improvements.

The questionnaire survey development procedures which was pre-tested and piloted before administered face to face to connected water utility customers was reported and presented. Also, the procedure for analysing data collected was briefly discussed. The next chapter presents analysis and findings of the operation and financial data of water utilities in the study area, obtained using document scanning, showing their level of efficiency.

5 Findings from Qualitative Data Analysis

5.1 Chapter Introduction

This chapter presents findings from qualitative data obtained from observation, individual interview and focus group discussion; during the exploratory phase carried before the main survey. The data obtained from this primary source are presented in isolation, with the intention of providing the information needed for developing the questionnaire survey, and to address key research questions posed in the study. The qualitative data are presented in isolation of the quantitative data, but are used to validate and triangulate the quantitative date.

5.2 Case Study Location

This section provides background information on Abuja, the Federal Capital Territory (FCT) of Nigeria, and the case study location where the field studies was carried out. The information covers geographical, demographic and socio-economic characteristics. The operation and financial data obtained during observation with a pre-determined assessment checklist, was used to review and analyse the FCT Water Board financial statements, to give insight of how efficient and financially sustainable is the FCT Water Board to provide quality service to the FCT customers. Hall (2006), states that public utilities in Nigeria including water, are failing to provide infrastructure services required for socio-economic development; and concluded that the water supply systems are unreliable and underdeveloped. It is therefore necessary to first assess the operational characteristics of the case study utility to confirm or disprove halls assertion on the state of water service delivery.

5.2.1 The Federal Capital Territory (FCT), Abuja

The Federal Capital is part of the 36 states and one territory that make up the Federal Republic of Nigeria (see figure 5.1). Abuja was conceived in 1979 and was built in phases. It was chosen as the new Federal Capital because of its centrality and neutrality devoid of any ethnic claim, and as a result of the infrastructural decay and congestion of Lagos. Abuja is a well-planned city and it officially became Nigeria's capital on the 12th of December 1991, replacing Lagos as the old Federal Capital. The FCT is bounded on the north by Kaduna State, on the west by Niger State, on the east and south-east by Plateau State, and on the south-west by Kogi State. It covers a land mass of about 8,000 (km^2) square kilometres, with a

population of 776,298 (NPC, 2006). Most of the population is found within the city of Abuja and the remaining areas of the capital territory. The city has major road connections, but has no efficient urban mass transit system. Abuja is not connected to the national railway network of Nigeria. Construction was underway in 2008 for a light rail system for the city, but was abandoned.

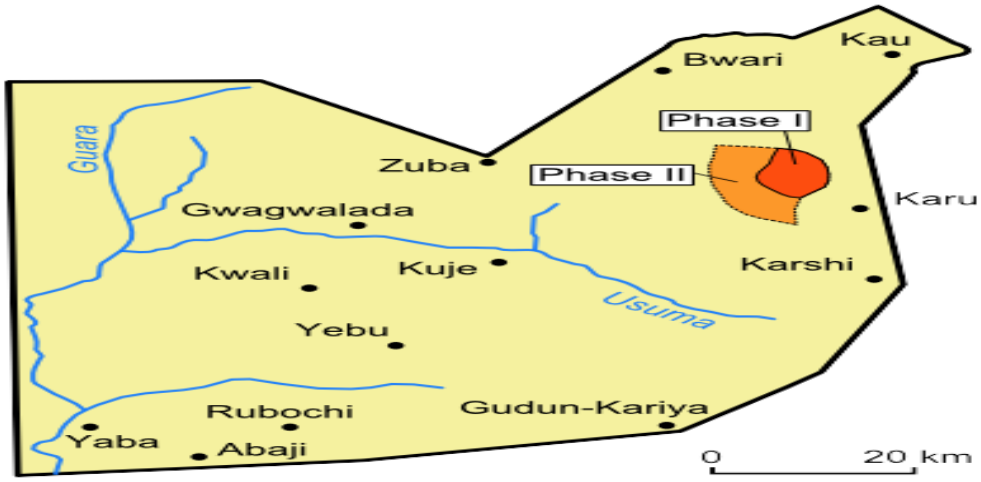

Figure 5.1: Map of FCT Showing Satellite Towns and Phases 1 & 2 of the City Centre
Source: Maps of World (2011)

As the Federal Capital, the Presidential Complex, National Assembly, and the Supreme Court are located there. It also houses the headquarters of the Economic Community of West African States (ECOWAS) and the regional headquarters of Organization of Petroleum Expecting Countries (OPEC). All the Ministries and Agencies are located in Abuja, including foreign embassies and also financial institutions. However, satellite towns exist at the outskirt of the city, where low income workers live and commute to the city on a daily basis. Abuja which is one of Africa's few purpose-built wealthiest and most expensive city, was intended to let civil servants escape from the chronic congestion, overstretched infrastructure and unhygienic conditions of Lagos, the former capital. The urban poor who live on the fringes of the city such as Karu, Kubwa, Gwagwalada, Buari, Kuje etc. have no access to good quality of infrastructure services, such as electricity, piped water supply and good network of roads (Murray, 2007). Karu which was originally planned for the low income civil servants still has no potable water supply, sanitation or electricity.

The Federal Capital was meant to be built in phases, but the influx of people has put pressure on its infrastructure which is not commensurate to the growth rate of the city. The city's Phase 1 districts (coloured red) in figure 5.1, comprises of: the Central

area, which is the city's central business district where the three arms of government (National Assembly, Supreme Court and the Presidential Complex), Federal Ministry Secretariat Complex, Banks, and other government-related offices; GARKI (I and II); WUSE (I and II); MAITAMA and ASOKORO which are exclusive to the upper class (low density areas) and is the location of most European Embassies. The Phase 2 districts (coloured orange) in figure 5.1, comprises of: KADO, DURUMI, GUDU, UTAKO and JABI districts, while Phase 3 districts comprises of: MABUCHI, KATAMPE, WUYE and GWARIMPA districts. There are also five sub-urban districts, which are KARU/NYANYA, JIKWOYI, GWAGWALADA, KUBWA, and BUARI. Along the airport road are clusters of satellite settlements such as: LUGBE, CHIKA, KUCHIGWORO and PYAKASSA. Other satellite settlements are IDU (the Industrial layout), MPAPE, KARIMU, GWAGWA and DEI-DEI (housing the International livestock and International building materials market).

5.2.2 Overview of FCT Water Board

The Federal Capital Territory Water Board (FCTWB) was established as a statutory corporation in October 1989 to provide water supply services, potable and other, to the Federal Capital Territory (FCT). It is a self-regulating monopoly whose main waterworks (raw water intake and treatment plant) is located at the Lower Usuma Dam in Buari Area Council. Another Water Works at Jabi with output capacity of 250 m^3 per hour is presently out of operation. The development of the treatment plant for the Capital city is expected to be executed in four phases, phase 1 and 2 with output capacity of 5.000 m^3/hr. each has been completely developed, while work is has commenced on phase 3 of the treatment plant. The lack of completion of phase 3 and 4 of the treatment plant has made water scarcity a regular feature in the capital city.

5.2.3 Operational Characteristics of FCT Water Board

An assessment of the FCT Water Board operations, between 2006 and 2008 in table 5.1, shows that out of two water schemes with a joint capacity of 246,000m^3/d; only one is functioning and thereby reducing the production capacity to 240,000m^3/d. With the rapid development of Abuja, phase 3 and 4 water treatment plant ought to have been completed to double the current capacity to 480,000m^3/d. With the threat of urbanisation from the rural to urban centres in developing countries, the treatment capacity of the FCT Water Board ought to be increasing its production capacity, rather than stagnating for three consecutive years and operating at 50% capacity.

Table 5.1: Operational Assessment of FCT Water Board (2006 – 2008)

	Production (Capacity Utilization):	2006	2007	2008
1.	Number of Water Schemes	2	2	2
2.	Number of Surface Water Schemes	2	2	2
3.	Number of Underground Water Schemes	0	0	0
4.	Total Number of Functional Schemes	1	1	1
5.	Total Installed Capacity of Schemes (m^3)	246,000 (m^3/d)	246,000 (m^3/d)	246,000 (m^3/d)
6.	Total Volume of Water Produced (m^3)	240,000 (m^3/d)	240,000 (m^3/d)	240,000 (m^3/d)
7.	Total Volume of Water Sold (m^3)	-	-	-

Source: FCTWB Audited Financial Reports

5.2.4 Financial Analysis of FCT Water Board (2003 – 2008)

Financial indicators have been used to assess the financial status of the FCT Water Board; the audited financial statements of FCT Water Board from 2003 to 2008 were obtained. This will help show the financial situation of the board by showing trends and patterns that would be useful in providing solution.

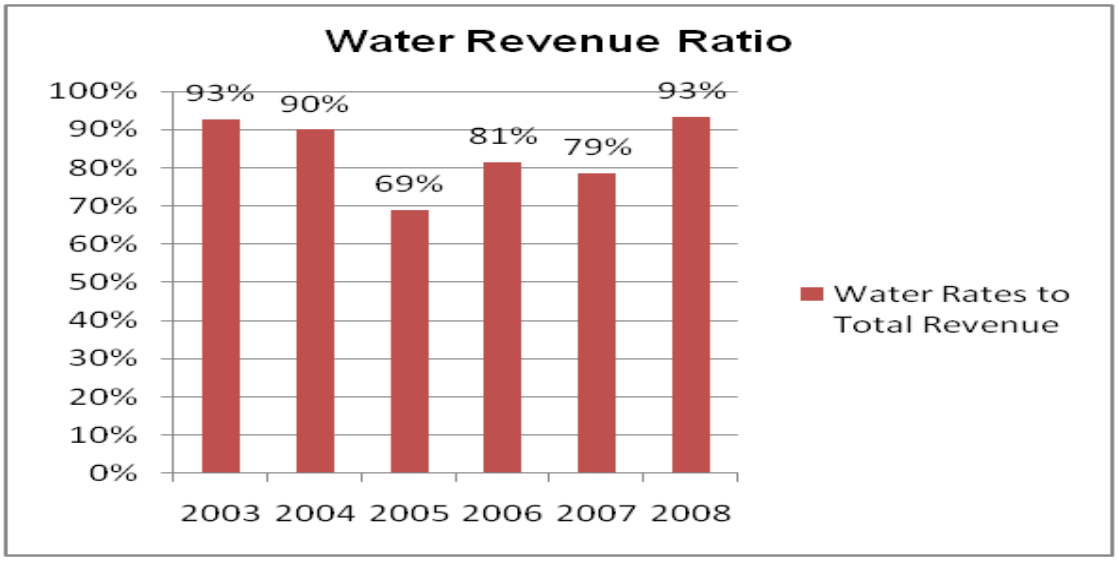

Figure 5.2: Water Revenue Ratio for FCT Water Board

Analysis of the financial statement of FCT Water Board in appendix 2 as illustrated graphically with figures 5.2, 5.3 and 4 shows the contributions of the water rate collected to the total revenue for FCT Water Board.

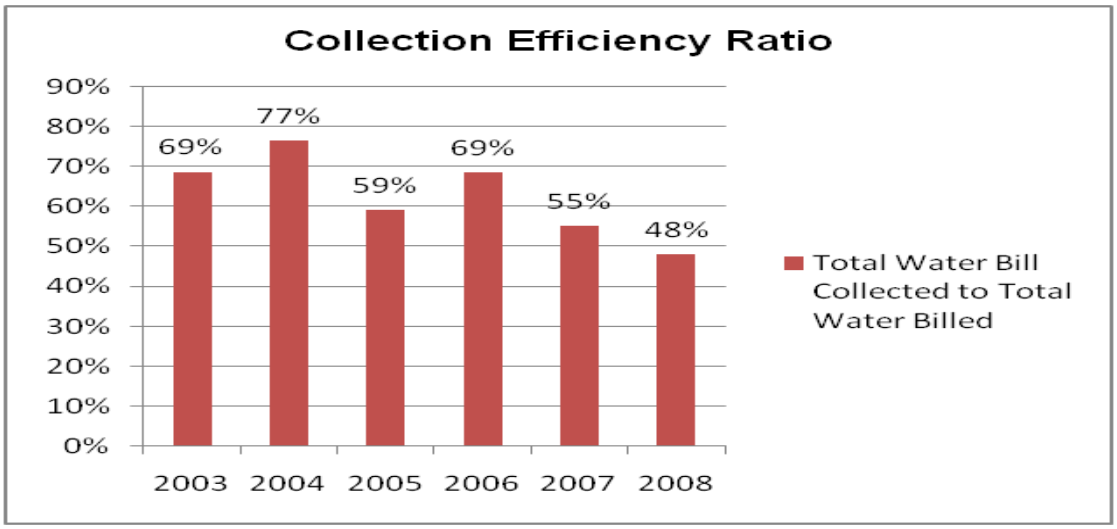

Figure 5.3: Collection Efficiency Ratio for FCT Water Board

While FCT Water Board is not dependent on Government for financing its operation and maintenance, with water sales and connection fees accounting for 93% and 7%, and water sales only accounting for 93% of 2008 revenue.

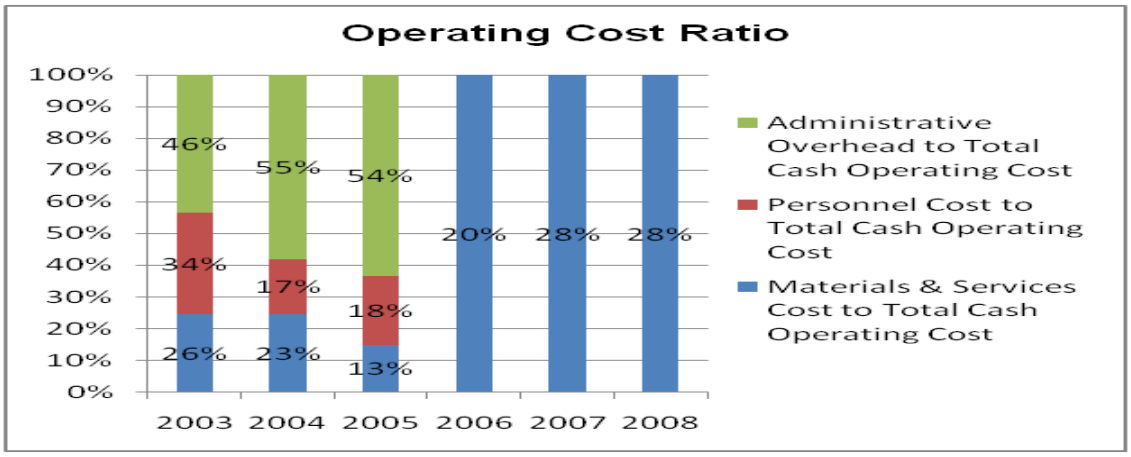

Figure 5.4: Operating Cost Ratio for FCT Water Board

5.2.5 Comparative Analysis of Three State Water Agencies

The Federal and State governments in Nigeria are seeking ways to attract the private sector for fresh investments to finance the provision of infrastructure in the country; the water sector is not left out. In the light of these, would the state government continue to make money available for operation and maintenance? How financially sustainable are they? Proposed reform would put a lot of pressure on State Water Utilities (SWA's) to increase their collection efficiency of account receivables to cover

operation and maintenance cost and to reduce state subsidies for water utilities (as it has happened in other countries), because urban piped water can be a viable business. A comparative analysis of what State Water Agencies in Nigeria charge for water services against what water vendors charge in each state is tabulated below. Table 5.2 confirms that public utility customers (especially the urban poor) suffer when supply is intermittent by paying higher rates for water services when supplementing the public water supply (Ojo, 2008).

In comparison from statistics, FCT Water Board (FCTWB), Lagos State Water Corporation (LSWC) and Cross River State Water Board (CRSWBL) charge fifty Naira (20p) and one hundred Naira (40p) only each against, one thousand Naira (£4 equivalent) charged by water vendors. The water rate charged by State Water Agencies in Nigeria is far below what the poor pay to water vendors. This shows that the urban poor have the ability to pay higher than what the SWA charge for water services and if water is made available uninterrupted, the people will be willing to pay what they pay the water vendor.

Table 5.2: Comparison of Tariffs Charged by Utilities and Vendors in Nigeria

State Water Agencies (SWA) in Nigeria	SWA Average Tariff(N/m³)	Vendor Price(N/m³)
FCT. Water Board	50.00	1000.00
Lagos State Water Corporación	100.00	1000.00
Cross River State Water Board Limited	100.00	1000.00

Source: Ojo, 2008 (N125 = $1 United States Dollar)

Ratio analysis has been used to compare the Federal Capital Territory Water Board's (FCTWB) financial statement with Lagos State Water Corporation (LSWC) and Cross River State Water Board Limited (CRSWBL). Ratios are calculated from current year numbers and are then compared to previous years, other companies, or to judge the performance of the company. They are most useful when necessary to compare year to year performance to determine if things are getting better or worse for an organisation. It is a tool used by individuals to conduct a quantitative analysis of information, by comparing companies in an industry to see which one is performing best, given common constraints (Ittelson, 1998; Bernstein and Wild, 2000). There are many ratios that can be calculated from the financial statements pertaining to performance, activity, financing and liquidity. (Bernstein & Wild, 2000). Table 5.3

shows the financial statement of three State Water Agencies from the three regions of Nigeria (North, South West and South East) that are currently undergoing reform to position them for partial or full privatisation.

Table 5.3: Comparative Analysis of three SWA's in Nigeria (2008)

Revenue Source (Per Annum)	FCTWB	LSWC	CRSWBL
Government Subvention/Grants	0	160,000,000	0
Water Rates	1,163,953,039	632,187,970	219,600,000
Bank	0	0	168,000,000
Others	83,799,954	0	1,230,000
Total Revenue per annum	1,247,752,993	792,187,970	388,830,000
Revenue Collection:			
Total Water Billed	2,419,200,000	1,527,316,000	615,900,000
Total Water Bill Collected	1,163,953,039	623,187,970	219,600,000
Total Outstanding for the Year	1,255,246,961	904,128,030	396,300,000
Operating Costs:			
Materials and Services	244,015,292	663,974,070	89,500,000
Personnel Cost	162,449,771	234,458,900	21,220,000
Administrative Overhead	478,208,420	348,753,090	1,700,000
Total Cash Operating Cost	884,673,483	1,247,186,060	112,420,000
Depreciation	84,081,189	0	14,700,000
Total Operating Cost	968,754,672	1,247,186,060	127,120,000
Net Income from Operation (Profit/Loss)	278,998,321	-454,998,090	261,710,000
Revenue Ratio:			
Water Rates to Total Revenue	93%	80%	56%
Water Rates to Cash Operating Cost	132%	51%	195%
Collection Efficiency Ratio:			
Total Water Bill Collected to Total Water Billed	48%	41%	36%
Operating Cost Ratio:			
Materials & Services Cost to Total Cash Operating Cost	28%	53%	80%
Personnel Cost to Total Cash Operating Cost	18%	19%	19%
Administrative Overhead to Total Cash Operating Cost	54%	28%	2%
Total Operating Cost	100%	100%	100%

Source: Observation checklist data.

While the revenue ratio in figure 5.5 shows that water rates for FCT Water Board, LSWC and CRSWBL accounts for 93%, 80% and 56% of the total generated revenue, the collection ratio in figure 5.6 shows that the collection efficiency of FCTWB, LSWC and CRSWBL stands at 48%, 41% and 36% respectively. It shows that the SWA's in most developing countries that have not been reformed are not efficient and financially sustainable. This low collection efficiency from figure 5.6, is as a result of the combination of customers not been satisfied and lack of motivation

of SWA employees in terms of incentives as a result of low numeration, in adequate training and working environment. This is discussed in detail in section 7.2 and 3.

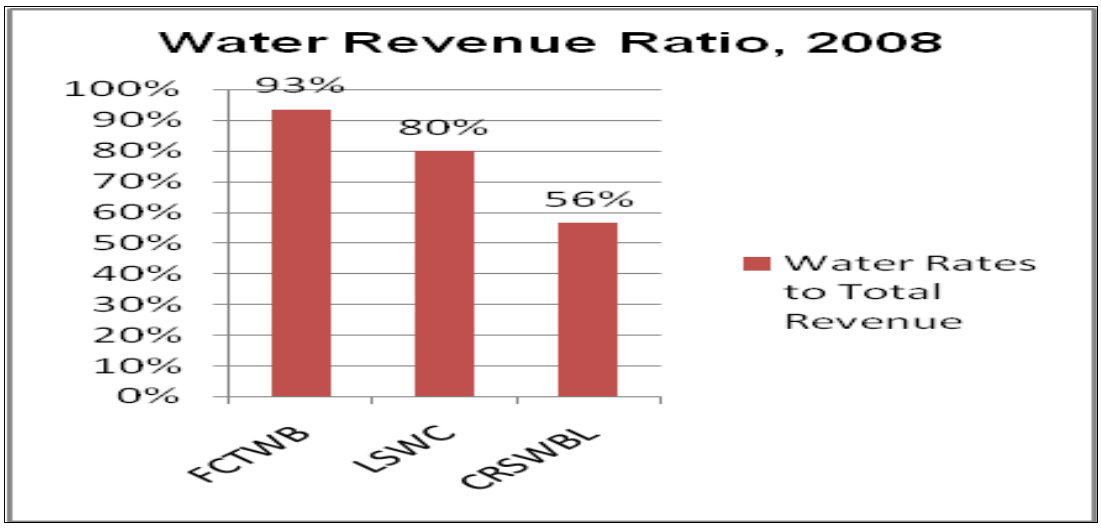

Figure 5.5: Water Revenue Ratio of three SWA's in Nigeria

Water revenue ratio shows revenue from water sales to other sources and the collection efficiency. A trend between 2003 and 2008 shows that 69% efficiency was achieved in 2003 and declined to 48% in 2008. This signifies danger to the survival of FCTWB whose water sales ratio account for 93% in 2008 financial year. It shows that the SWA is not efficient to satisfy customer's needs and be financially sustainable. .

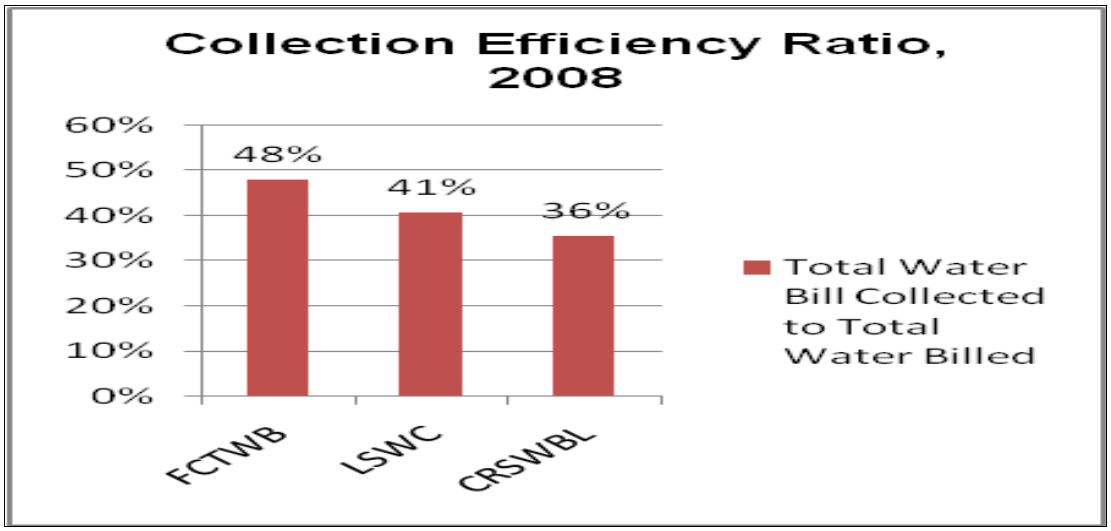

Figure 5.6: Collection Efficiency Ratio of three SWA's in Nigeria.

This is not limited to FCTWB alone; two other SWA from the South West region and South Eastern Region of Nigeria namely; Lagos State Water Corporation (LSWC)

and Cross River State Water Board Limited (CRSWBL), also records 41% and 36% in their water bills collected against total water billed for the year 2008.

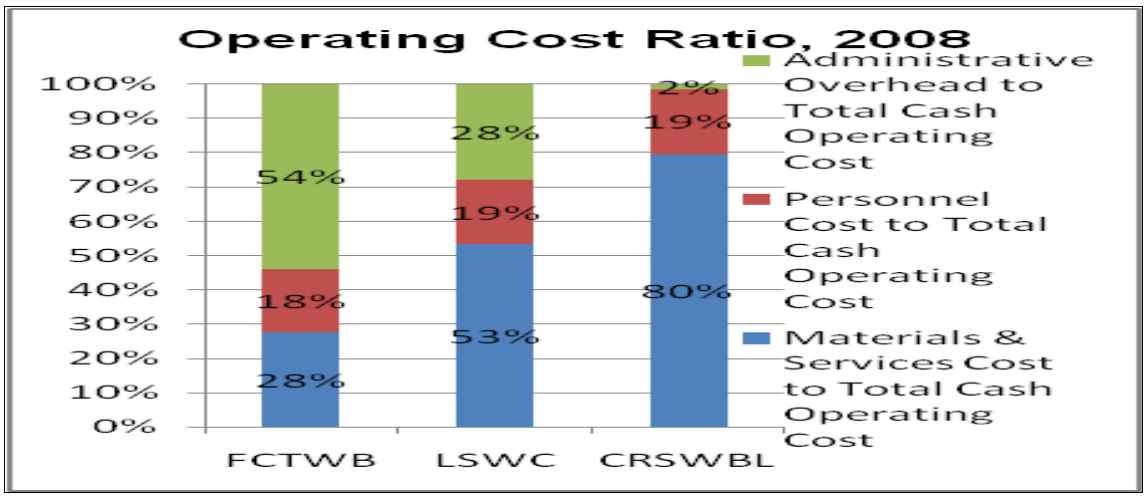

Figure 5.7: Operating Cost Ratio of three SWA's in Nigeria

When customers are not satisfied with service received, they are more likely to refuse bill payment and spend that money on supplementing the service through alternative means. A trend was identified both in the collection efficiency ratio in figure 5.6. While a decline in the collection efficiency ranging from 77% to 48% between 2004 and 2008, the relationship of water rate to cash operating cost increased from 58% to 132% between 2006 and 2008. The zeal for customers to pay their water bills can be attributed to the dissatisfaction of customers' with the quality of service, lack of motivation and incentives to the employees who are also internal customers.

5.3 Complaint Management

This section utilised (participant) observation technique for data collection on how FCT Water Board customer complain officially when they are not satisfied with the services provided by FCT Water Board; and the nature of their complaint. The findings from this is meant to answer one of the research questions this study, which seeks to find out how public utility customers voice out their dissatisfaction individually and collectively when they are not satisfied with the performance of FCT Water Board in terms of service quality. This will help provide multiple choices and complement the main survey.

5.3.1 Customer Care Service

Questions 1 & 2: How many registered customers are on the FCTWB database and how many are active (connected) customer?

FCT Water Board customer data base comprises of both connected and prospective customer, and out of the 43,177 registered customers on the FCT Water Board data base, only 33,740 (78.1%) has been connected to the public water mains. This leaves a back log of 9,437 (27.9%) prospective customers to await the completion of the phase 3 and 4 treatment plant before they can be connected. Perhaps, if the FCT Water Board treatment plant were to be working at maximum capacity, the connected customers would enjoy continuous water supply with adequate pressure.

Questions 3 & 4: How many Customer Care Centres and Customer Care Officers does FCTWB have?

The FCT Water Board has customer care desk in all the ten service areas, and one at the headquarters (office). However, not all the service area customer care desks are manned by customer care officers. There are ten customer care officers in total, four at the headquarters customer care centre and six out of the ten customer care desk in the service areas have one each. That means four customer care desks are not functioning. Complaints cannot be resolve at the service areas customer care desk, except they are referred to the headquarters customer care office. This takes a lot of time and creates administrative bottleneck for complaints to be resolved. During one of the customer care forum at Gwagwalada, a customer suggested thus that; *"Customer care should be decentralised and customer care units in the service area offices should be empowered to handle and deal with complaints regarding each service area"*.

Question 5: Does FCTWB have a Customer Charter?

The FCT Water Board does not have a customer charter that outlines customers' right to complain and the complaint procedure (time and how complaint would be resolved), when they are not satisfied with the service rendered. When customers know the complaint procedure, it would encourage them to complain. Sohail and Cavill (2007) states that customer charter would help raise standards in institutions that are failing to deliver quality services, as it sets out technical standards for operational efficiency in service delivery. Such standards specify time taken to provide a new connection, rectify or replace a faulty meter

Questions 6 & 7: Are there any complaint policy and complain handling procedure?

Also, there is no complaint policy and complaints are not logged for monitoring; 67% of the complaints received are not resolved within a year. This was confirmed by the Executive Director, when he was asked what sort of complaint policy FCT Water Board has during an interview; *"We do not have complaint policy, but we do have complaint forms. There should be an open door policy where complaints can be received at any time"*. The FCT Water Board procedure requires all complaints to be channelled through the Executive Director, and only letter complaints received through the Chief Executive Officers (CEO) office; are recorded in the complaint register. When complaints are made to the FCT Water Board customer care centres, the complaints are treated without documenting the type of complaint. When customers' complaint can't be treated immediately, customers are then asked to write officially through the Executive Director's office to the Water Board.

Question 8: Are all request and complaints logged (registered)?

Because complaints are not logged into a database, it will be difficult to track the complaint to know if they have been responded to on time and if they have been resolved. When letters are received in the Executive Directors office, a file is opened and sent to the appropriate department for action to be taken. The Executive Director confirmed this, during an interview with him; *"I receive complaint here myself, and then send it to the appropriate authority for action"*. Letter of complaint do get missing in this way and can't be traced. A customer raised this during the Gwagwalada customer forum thus; *"Complaint register should be opened so that registered complaint, would be monitored to avoid repeated follow up letters"*.

Questions 9 & 10: What are the types (nature) and number of complaint received in 2008?

The nature of complaint is a reflection of the level of service provided by public service providers. The complaints received officially through letter by FCT Water Board for 2008 from table 5.4 ranges from; faulty meter, wrong meter reading, conversion of tariff from commercial to domestic, lack of water supply, over billing, no bill and reconciliation of account. However, both recorded and unrecorded requests from complaint forms given to customers who come to the customer care units, regardless of the type and method of complaint include; reconciliation of account,

non-reflection of payment, pipe burst, change of name, request for connection (new record creation), request for statement, request for bill and new record.

Questions 10, 11 & 12: What is the total number of complaints received and the number acknowledged in 2008? And why are they not all resolved?

From table 5.4, a total of 2,374 letter complaint was officially received in 2008 and where all acknowledged by FCT Water Board. This does not include complaints that are pending (received in the preceding year that has not been resolve). Out of the 2,374 complaints, only 1,612 (67.9%) were resolved, leaving 762 (22.1%) unresolved. This would have increased the waiting time if a customer charter were to exist, leaving customers dissatisfied. All the complaints are associated with billing and non-reflection of payments. A lot needs to be done in terms of billing accuracy.

Table 5.4: FCT Water Board Complaint Management Assessment (2008)

	Customer Care:	**Remarks**
1.	Customers on Data base	43,177
2.	Number of Active customers?	33,740
3.	Number of Customer care centres?	11 (10 in the Area Offices & 1 at the Headquarters)
4	Number of customer care officers?	12 (4 at the HQ, 6 in the Area Offices)
5.	Does the Board have a Customer Charter?	No
6.	Complaint policy?	No
7.	Complaint Procedure?	Writing letters through Directors
8.	Are all request/complaints Logged?	No, but there is a complaint register
9.	What are the types of complaint received?	1. Faulty meter 2. Wrong meter reading 3.Conversion from commercial to domestic 4. Lack of water supply 5. Over billing 6. Not billed 7. Reconciliation of account.
10.	Total number of complaints received in 2008?	2,374
11.	Total number of complaints acknowledged?	2,374
12.	Total number of complaints resolved?	1,612
13.	And why are they not all resolved?	Payment credited not clear, but customers were contacted and they are being resolved
14.	Are the complainants aware that action is being taken to resolve the complaint?	Yes, through acknowledgement Letter

Source: Observation checklist data

5.3.1.1 Communications between FCT Water Board and the Customers

A two Communication with the customers is very essential in any business venture, as it keep the customers up to date with the challenges being encountered by the

organisation and efforts being made to overcome them. This will make customers appreciative and sympathetic with the organisation. Billing is a form of interaction with customers; and from table 5.5, it is obvious that FCT Water Board does not communicate with its customers regularly. The only means of communicating with their customers in case of default is through disconnection notice on the subsequent bill issued, which customers might not receive because of the high rate of missing bills in transit. No email or letter reminder and customers cannot check their account online, as is the case with water utilities in the UK. Apart from complaints received at customer care units of the Board, no other credible means of getting feedback from customers regularly. FCT Water Board claims that feedbacks were got from customer forum, but they are not regularly held. During a customers' forum observed, customers suggested that customers' forum should be held regularly (quarterly) to improve communications between FCT Water Board and the customers.

Table 5.5: FCT Water Board Method of Communication with Customers (2008)

	Payment Default:	**Remarks**
1.	How are defaulting customers sanctioned?	Through disconnection of water services
2.	Are notices of disconnection given before disconnection?	Yes (10 days' notice)
3.	How is notice given?	Disconnection notices are indicated on the water bill dispatched to customer
4.	What period of notice is given?	10 days
	Feedback:	
1.	Do you regularly get feedback from	Yes
2.	How do you regularly get feedback?	Through customer's forums.

Source: Observation checklist data

5.3.2 Methods of Complaining

It is important to know how service providers capture customers voice (feedback) to improve service quality in a monopoly like public water service provision, when there are no choices. Sohail and Cavill (2007) identified complain in writing, telephone or paying personal visits to an office, as open and effective complaint channels in the public sector. Observation of interaction between the FCT Water Board frontline staff and the customers at the customer care units and during customers' forums, gives an insight into the types of complaints associated with the characteristics of water supply in table 5.6.

Table 5.6: FCT Water Board Complaint Profile for July and August 2009

	Types of Complaint	**Methods of Complaint**			
	July 2009	**In-Person**	**Telephone**	**Letter**	**Total**
a	Reconciliation.	151	-	81	232
b	Non-Reflection of Payment.	37	-	22	59
c	Pipe Burst – Major.	69	-	5	74
d	Change of Account Name.	11	-	-	11
e	New Water Connection.	-	-	271	271
f	Request for Statement.	85	-	7	92
g	Request for Bill.	519	-	25	544
h	New Record Creation.	-	-	37	37
	Total for July	**872**	**-**	**448**	**1320**
	August 2009				
a	Reconciliation.	143	-	72	215
b	Non-Reflection of Payment.	38	-	4	42
c	Pipe Burst.	6	-	-	6
d	Change of Account Name.	23	-	8	31
e	New Water Connection.	-	-	272	272
f	Request for Statement.	665	-	-	665
g.	Request for Bill.	409	-	13	422
h	New Record Creation.	8	-	23	31
	Total for August	**1292**		**392**	**1684**

5.4 Customers' Requirements

This section provides the information needed to not only ensure that the main survey would be relevant to the customers; but would also minimise misrepresentation, since it will use the words of the customers to describe their requirements. The information provided using focus group, answers the first part of the key secondary research question of: *"What are the important customer requirements and the level of satisfaction of public water utility customers"?* As discussed in section 4.7.3, the aim of the focus group was to explore the opinions, attitude and attributes to understand the important requirements (expectations) and perception (satisfaction) of the customers. Participants drawn from the existing FCT Water Board data base and those that participated in the observed FCT Water Boards customers' forum held, preceding the focus group discussion; were asked to identify the important things to them if an alternative water service provider was to start operations.

5.4.1 Identifying Customers Requirements (Expectations)

The listed requirements are then listed on a flip chart. FCT Water Board customers' requirements are presented in table 5.7.

Table 5.7: FCT Water Board Customer Requirements

S/No	Customer Requirements
1.	Constant (reliable) Water Supply twenty-four hours daily.
2.	Portability (quality) of water supply (i.e. taste, colour and smell)
3.	Adequate water pressure to get to high rise buildings
4.	Adequate water pressure twenty-four hours daily
5	Giving notices before disconnection
6	Adequate notice of disconnection
7	Affordable tariff
8	Disconnection without damages to pipes
9	Disconnecting Individuals customers owing, rather than groups in multi-tenancy
10	Provision of meters to Individual customers
11	Accuracy of billing System
12	Prompt repairs of pipe burst and service provider bearing the costs
13	Quality assurance (third party regulation of water quality)
14	Dealing with motivated staff
15	Staff to be Knowledgeable /professional
16	Prompt responsive to customer's needs and complaints
17	Constant information dissemination to customers
18	Flexible meter/ connection fee i.e. instalment payments

Source: FCTWB Customers' Focus Group Discussion

5.4.2 Prioritising Customer Requirements

Participants were then given a sheet of paper and pen to prioritise the listed requirements by allocating scores according to how important they are to them on a scale of 1-10; 1 representing the least important and 10 representing the most important. The sheets of paper are then collected back and the mean scores are then added up after the focus group to allocate to each attribute. They are ranked and re-arranged according to their important mean scores for use in the main survey. Table 5.8 shows customers' requirements with mean scores each.

Table 5.8: FCT Water Board Customer Requirements and Important scores

S/No	Customer Requirements	Important Mean
1.	Constant (reliable) Water Supply twenty-four hours daily.	10.00
2.	Portability (quality) of water supply (i.e. taste, colour and smell)	10.00
3.	Adequate water pressure to get to high rise buildings	8.63
4.	Adequate water pressure twenty-four hours daily	8.50
5	Giving notices before disconnection	9.75
6	Adequate notice of disconnection	9.75
7	Affordable tariff	9.25
8	Disconnection without damages to pipes	10.00
9	Disconnecting Individuals customers owing, rather than groups in	9.63
10	Provision of meters to individual customers	10.00
11	Accuracy of billing System	9.75
12	Prompt repairs of pipe burst and service provider bearing the costs	9.13
13	Quality assurance (third party regulation of water quality)	7.75
14	Dealing with motivated staff	8.25
15	Staff to be Knowledgeable /professional	8.63
16	Prompt responsive to customer's needs and complaints	9.38
17	Constant information dissemination to customers	9.75
18	Flexible meter/ connection fee i.e. instalment payments	10.00

To know how important each of the requirements are, the data are fitted in spread sheet in ascending order as shown in figure 5.8 to help rank the requirements. Quality assurance is the least important of the requirements, while reliable water supply, quality of water supply, disconnection without damaging pipes, provision of meters to individuals and flexible meter connection fees top the list of the most important requirements.

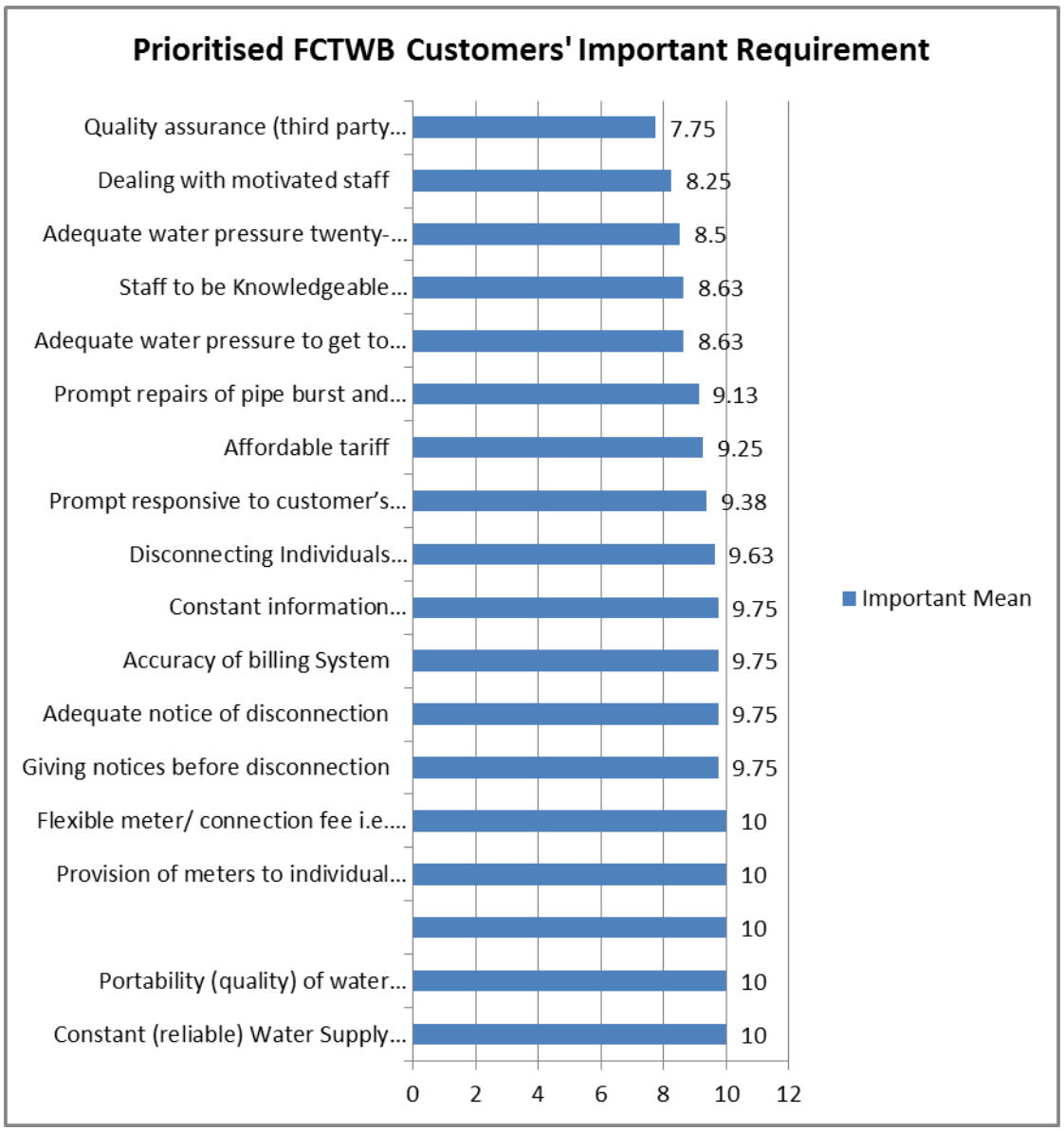

Figure 5.8: Priorities of FCTWB Important Customers' Requirements

The customers' requirements in table 5.7 are then grouped into a pre-determined model of eight attributes from the focus group identified requirement theme, shown in table 5.9; similar to the original SERVQUAL model also shown in table 5.10.

Table 5.9: Service Quality Attributes and Customer's Requirements

Service Quality Attributes	Customer's Requirements
Reliability	• Continuous water supply • Time of supply (when promised) • Consistency of supply
Billing	• Accuracy in meter reading/billings • Regular meter reading/bill delivery • Reflection of payments
Pressure	• Adequate pressure to high rise buildings • Constant pressure at all times
Colour	• Physical appearance • Particle free
Taste	• Taste free • Odour less
Courtesy	• Notice before any disconnection • Notice should be adequate
Relevant Knowledge	• Disconnecting without damage to pipes • Disconnecting only customers owing rather than groups in multi-tenancy dwellings • Prompt repairs of burst pipes and service provider bearing the costs • Staff exhibiting professionalism in carrying out duties
Helpfulness	• Affordable Tariff • Responding promptly to customer's needs/complaints • Constant dissemination of information to customers • Provision of individual meters • Flexible meter/connection fee payment terms (instalment) • Dealing with motivated staff

The attributes include: reliability of water supply; billing accuracy; adequate pressure; colour; taste; courtesy; relevant knowledge and helpfulness of staff. Table 5.10 shows the requirements, as attributes which will be statistically tested as a satisfaction indicator for monitoring the service quality of water service provider; after a customer satisfaction survey has been conducted. Subsequently, further statistical analysis would also identify the priority areas for improvement.

Table 5.10: FCT Water Board Prioritised Important Customers' Requirements

Important Requirements		Service Quality Attributes	Mean	Rank
Reliability	Reliability	• Continuous water supply • Time of supply (when promised) • Consistency of supply	10.00	1st
Responsiveness	Billing	• Accuracy in meter reading/billings • Regular meter reading/bill delivery • Reflection of payments	9.75	2nd
Tangible	Pressure	• Adequate pressure to high rise buildings • Constant pressure at all times	8.57	7th
	Colour	• Physical appearance • Particle free	7.75	8th
	Taste	• Taste free • Odour less	8.63	6th
Assurance	Relevant Knowledge	• Disconnecting without damage to pipes • Disconnecting only customers owing rather than groups in multi-tenancy dwellings • Prompt repairs of burst pipes and service provider bearing the costs • Staff exhibiting professionalism in carrying out duties	9.35	5th
Empathy	Helpfulness	• Affordable Tariff • Responding promptly to customer's needs/complaints • Constant dissemination of information to customers • Provision of individual meters • Flexible meter/connection fee payment terms (instalment) • Dealing with motivated staff	9.44	4th
	Courtesy	• Notice before any disconnection • Notice should be adequate	9.70	3rd

5.5 Chapter Summary

Most low income countries like Nigeria are saddled with inefficient public utilities, hampered by infrastructural challenges such as, low investment and poor maintenance of assets. This is caused by factors stated in section 2.2.1; such as inadequate cash flow due to low tariff setting and high personnel overheads; weak institutional structures to operate the infrastructures; lack of clear cut policies and standards and the monopoly nature resulting to poor level of service. It has been established from analysis of the operation and financial statements of FCT Water Board, Cross River State Water Board Limited and Lagos State Water Cooperation in section 5.2, that most public water utility in Nigeria are not operationally efficient and financially sustainable to provide good quality of service to its connected customers.

Findings from observation of how complaint are handled in customer care units of FCT Water Board and the nature of customer complaints both also during customer forum observation discussed in section 5.3, shows that customers prefer to officially complain to FCT Water Board personally, when they are not satisfied with the quality of service provided. And the nature of their complaint includes: Non – reflection of payment; account reconciliation; pipe burst; change of account name; request for statement of account; request for bill and new connection.

Findings from focus group discussion in section 5.4 showed that in order of priority, the customers' important requirements include: reliability of supply; billing accuracy; courtesy of staff; helpfulness of staff, relevant knowledge of staff; taste; adequate water pressure and colour.

The next chapter presents the findings from the (quantitative) analysis of the survey, administered to the FCT Water Board customers; to determine their level of satisfaction, the important requirement score, priority areas for improvement and the satisfaction attribute that can best predict overall satisfaction for monitoring the level of service over a period of time.

6 Findings from Quantitative Data Analysis

6.1 Chapter Introduction

This chapter presents the analysis of the survey carried out on FCT Water Board customer to determine their level of satisfaction, the important requirement score, priority areas for improvement and the satisfaction attribute that can best predict overall satisfaction for monitoring the level of service over a period of time. The chapter is divided into six sections and deals with data analysis and presentation of results. In most social research the data analysis involves three major steps, done in roughly this order: Cleaning and organizing the data for analysis (Data Preparation); describing the data (Descriptive Statistics) and Testing Hypotheses and Models (Inferential Statistics) (Stockburger, 2007). The analysis is organised into three main sections namely:

- Preliminary analysis (data preparation), involves entering the data into the computer programme SPSS release 16 and 17; checking the data for accuracy; transforming the data; and developing and documenting a database structure that integrates the various measures.

- Descriptive analysis involves summarizing and aggregating results from groups to describe the basic features (characteristics) of the Federal Capital Territory Water Board (FCTWB) connected customers. It provides simple summaries and the measures of the sample. Together with simple graphics analysis, they form the basis of virtually every quantitative analysis of data. Descriptive analysis includes frequency tables and graphs

- Further (Inferential) analysis is used to try to infer from the sample data what the population thinks and to make judgments of the probability that an observed difference between groups is a dependable one or one that might have happened by chance in this study. It is used to test hypotheses and Models and includes chi-square test of significance between cross tabulated categorical variables; correlation using correlation coefficient to measure the degree of linear relationship between dependent (overall satisfaction) and independent (satisfaction attributes) variables to determine the strength and direction; scatter plot to understand by illustration, how the correlation

coefficient changes as the linear relationship between two variables alter: regression to identify which satisfaction attribute best predict the overall satisfaction. Gap analysis of importance and satisfaction scores, and customer satisfaction Index.

The analysis and presentation is concluded with a summary of the chapter.

6.2 Preliminary Data Analysis

6.2.1 Data Entry

Robson (2002), states that if a software package is to be used for analysis, the data to be analysed must be entered into the computer in the form required by the software. This involves checking or logging the data in; checking the data for accuracy; entering the data into the computer; transforming the data; and developing and documenting a database structure that integrates the various measures.

6.2.2 Data Cleaning (Test for Errors and Missing Data)

A consistency check was carried out to determine the validity and reliability of the output. Table 6.1 consist of categorical (nominal) variables, while table 6.2 below consists of ranked (ordinal) variables, were used later for generating frequency and contingency tables.

Table 6.1: Categorical (Nominal) Variables

		Type of dwelling	Classification of Area	What is your position in this building?	What is your gender
N	Valid	649	649	649	649
	Missing	0	0	0	0
	Minimum	1	1	1	1
	Maximum	4	3	5	2

The frequency distribution table of the demographic and socio-economic characteristics in number and percentages is presented as appendix 8a. The nine variables in tables 6.1 and 6.2 were then cross tabulated against overall satisfaction to see the pattern and trend of the relationships.

Table 6.2: Ranked (Ordinal) Variables

		How many people live in your apartment	How long have you lived here?	Which of the following age group do you belong?	Which of the following is your highest qualification?	What is the family annual income?
N	Valid	649	649	649	649	649
	Missing	0	0	0	0	0
	Minimum	1	1	1	1	1
	Maximum	3	4	6	5	5

6.2.3 Organizing the data for analysis

The frequency tables have been grouped into sub-categories, and the variables have been divided for easy analysis and interpretation according to Kumar (1996). The sub-categories includes, demographic/socio-economic; water supply and willingness to pay; connection and billing; complaint management; customer requirements/importance; customer satisfaction and customer loyalty.

6.3 Frequency Distribution of Sample

There are two ways in which SPSS can be used to carry out descriptive analysis. One is through the process of frequency and the other by generating statistics independently of frequencies. The latter is used if certain statistics need interrogation independent of the frequencies and can only relate to scale variables (Weinstein, 2006). As mentioned in section 5.5.4, a total of 649 useable questionnaires were returned, in which respondents were asked to provide socio-economic information of their household. Descriptive statistics have been used to analyse the above mentioned categorical (Nominal and ordinal) variables with the use of frequencies.

6.3.1 Demographic Characteristics of Sample

Numerous attempts have been made in the past to collect reliable time series demographic data - which is lacking - in Nigeria through vital registration, censuses and sample surveys, but the desired results have not been achieved. In the past, efforts to generate reliable demographic data have included the conduct of numerous sample surveys, which varies in scope, coverage and details, since they were

conducted by individuals and organisations to meet their specific needs (NPC, 1998; NBS, 2009). Nigeria however, conducted a successful population census in November 1991 which was followed by a Post Enumeration Survey (PES) in December 1991 (This remains the most credible census in Nigeria which provides a rich set of demographic and socio-economic data till date). The demographic and socio-economic characteristics of sample data would be validated with the 1991 population census figures of the Federal Republic of Nigeria, as published in the analytic report at the National level.

Omonona (2009) identified some factors that correlate with poverty and their influence on household. The factors includes size of household, marital status and type of family, dwelling type, safe access to water and sanitation, gender, age, and education. Income which is the major determining factor of poverty has been included in the demographic variables to determine the socio-economic status of the sample. Demographic questions are used to identify socio-economic characteristics such as (i) geographic place of residence (area classification); (ii) type of dwelling; (iii) status in building; (iv) size of family or household; (v) how long they have been in building; (vi) gender; (vii) age; (viii) educational level and (ix) income. These questions will help to classify the difference between poor and non-poor customers and where they mainly reside, and their opinions on overall satisfaction. All the factors (i-ix) have been known to determine the level of poverty or income level (NBS, 2009). Due to the sensitivity of some of the questions like age, income and educational qualification; they were grouped into ordinal scales to increase response rate and reliable answers. Respondents that did not respond to these questions were classified as non-responsive and removed. Due to the sensitivity of questions like age, educational qualifications and income, they were grouped into bracket range to improve response and reliability, which is important in determining their level of satisfaction, needs and requirements. Data was screened and cleaned with SPSS release 16 software package, to check for errors and missing data.

6.3.2 Measures of Central Tendency and Dispersion

Statistical measures that reflect a typical value for a variable are referred to as measures of central tendency. The mode, median and the mean, which are commonly referred to as the three mean, are the statistical test for determining the measure of central tendency, the choice of the statistical test to use would however depend on the level of measurement of the data (Weinstein, 2006). Frequency tables

generated for some variables such as age, time that people have lived in their particular neighbourhood, size of household and annual family income, can be extremely long and cumbersome to manage. This statistical test is used to explore the characteristics of the data set through the identification of a value within the data that represented the degree of typicality known as the central tendency.

Table 6.3: Demographic (Nominal) Variables

		Statistics			
		Type of dwelling	Classification of Area	What is your position in this building?	What is your gender
N	Valid	649	649	649	649
	Missing	0	0	0	0
	Mode	Block of flats	High Density	Head of family	Male
	Minimum	Block of flats	Low Density	Head of family	Male
	Maximum	Maisonette	High Density	Others	Female

The mode is frequently used for nominal variable in picking out the most typical response while the median is the most useful measure of central tendency for ordinal variable, where there is a logical order of progression through the values that have been assigned (Weinstein, 2006). The typical responses in table 6.3 for demographic variable are; block of flats, high density, head of the family and male, while the mean in table 6.4 are; 5 & above,25-48 months, age 35-44, graduate and 501k-1million Naira.

Table 6.4: Socio-economic (Ordinal) Variables

Statistics						
		How many live people in your apartment	How long have you live here?	Which of the following age group do you belong?	Which of the following is your highest qualification?	What is the family annual income?
N	Valid	649	649	649	649	649
	Missing	0	0	0	0	0
	Median	5 & above	25-48months	35-44	Graduate	501k-1m Naira
	Range	3-4 Persons	25-48months	55-65	Postgraduate	501k-1m Naira
	Minimum	1-2 Persons	< 6 months	16-24	Secondary	<100K Naira
	Maximum	5 & above	> 48 months	65+	Others	>1m Naira

6.3.2.1 Classification of Area:

According to the land use classification by the Federal Capital Territory (FCT) development control standards and regulations of 1986, the result of the demographic/socio-economic characteristics frequency generated in appendix 8a and illustrated with figure 6.1, shows that majority (78.7%) of the respondents live in high density areas of the Federal Capital Territory, 17.6% in the medium density while only 3.7% live in the low density area. The land use classifies plot size less than 900m^2, 900-1,200m^2 and above 1,200m^2 as high, medium and low density (FCDA, 1986).

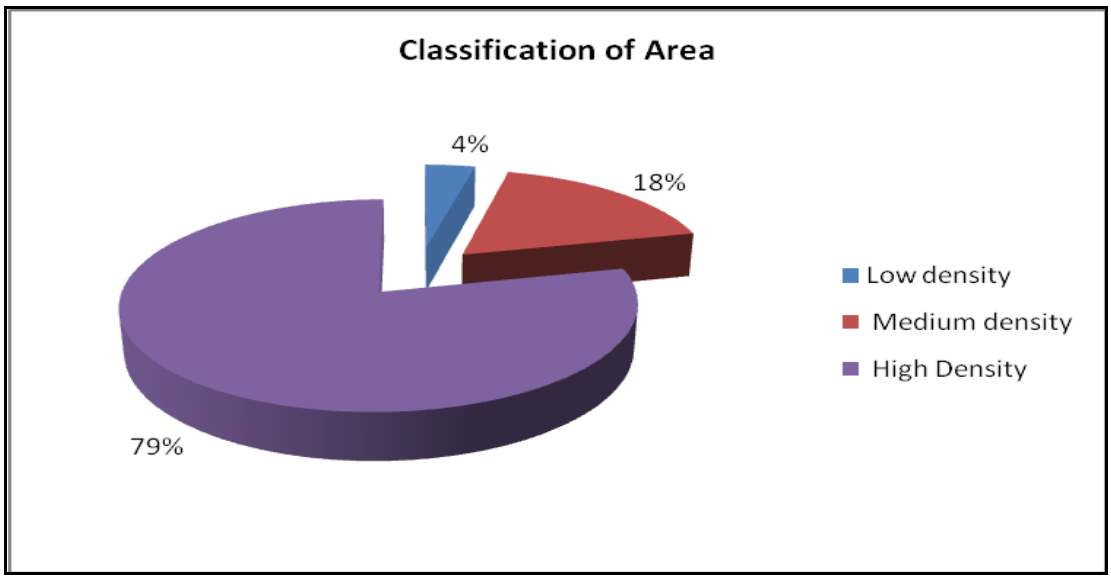

Figure 6.1: Classifications of Areas

The high density areas are mostly located at the outskirts and within the inner core of the FCT. Poverty is common with households dwelling in block of flats, especially in high rise buildings of high density areas, than those dwelling in duplexes, bungalows and maisonettes.

6.3.2.2 Types of Dwellings:

Also, majority (54.2%) of the respondents (in figure 6.2) reside in block of flats, with 32.5% in semi/detached bungalow and 12.9% residing in semi/detached duplex respectively, while only 0.3% of the customers live in maisonettes.

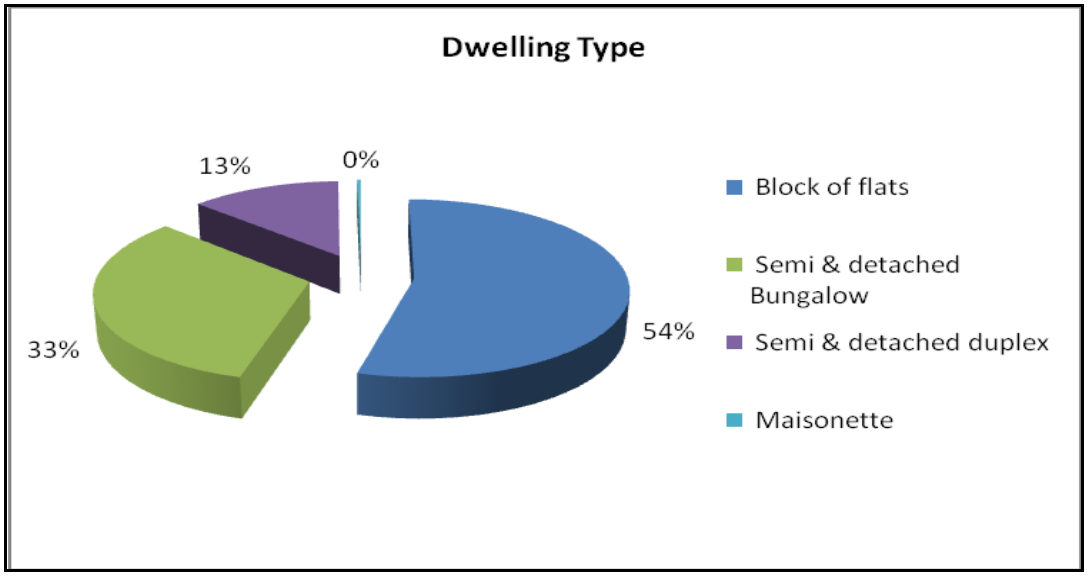

Figure 6.2: Types of Dwellings

Due to the land constraint and land use, most of block of flats are located within the heart of the FCT in the high density area, while the detached and semi-detached duplexes and bungalows distributed within medium and low density areas respectively.

6.3.2.3 Status in Building:

The status of respondent in the building is used in place of marital status as the survey is not restricted to residential properties only.

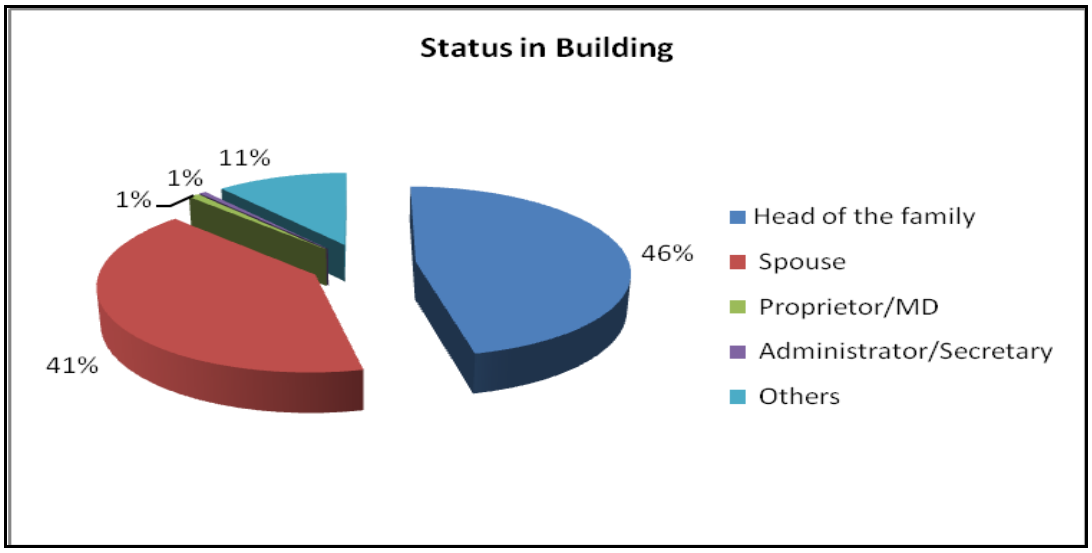

Figure 6.3: Status in Building

Most of the time , it is the spouse or children that ensures that water is available for house use and engage in payment of bills when issued. From (figure 6.3), most of the respondents (46.4%) are the head of the family followed by 40.8% which are spouses in residential areas and 11.2% are classified as others (relations and children). Only 0.9% and 0.6% account for Proprietors (MDs) and Administrator/secretary in business premises respectively.

6.3.2.4 Size of Household:

Large family size of about 12, reduces welfare in most regions of Nigeria, the larger the household size, the poorer the family. The majority (64.6%) of the respondents (in figures 6.4) have a household size of five persons and above, with 31.1% account for between three to four persons, and only 4.3% with two persons and below in a household.

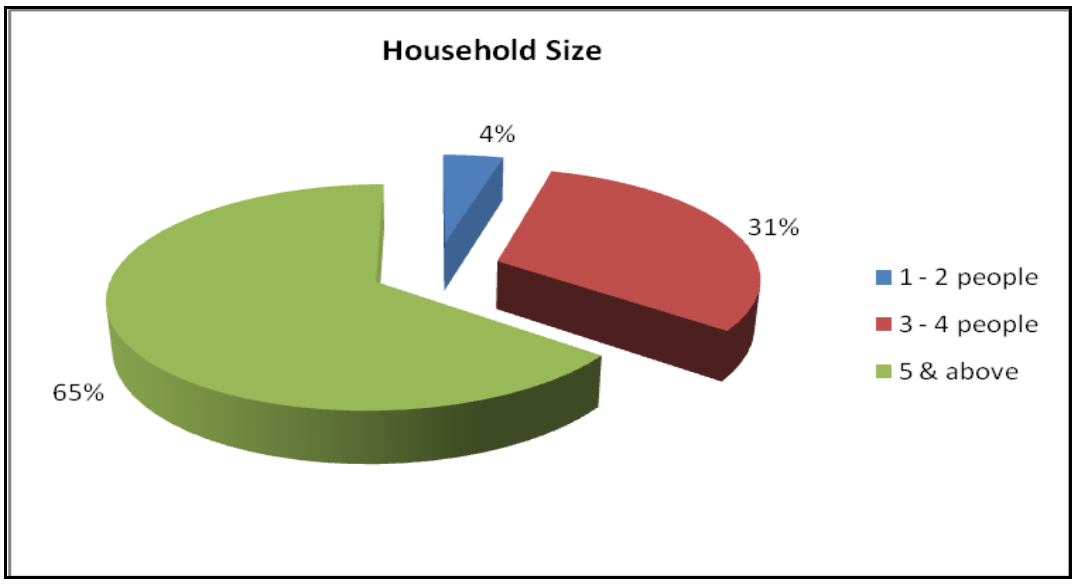

Figure 6.4: Size of Household

The filling of questionnaires was not restricted to head of households only, and it is hoped that the opinion of a household of four and above persons that has lived for an average of 48 months is crucial to the survey in terms of service usage and experience.

6.3.2.5 Duration of Stay in Dwelling:

48% have lived in the building for a minimum of 48 months (4years), 26% have lived between 25 and 48 months (2-4years), 25% have lived in the premises for a period of 6 to 24months ($^{1}/_{2}$-2years). Any information provided from someone who has lived in a house for less than six months is considered not reliable in forming an opinion based on experience of encounter with the FCTWB, which is crucial to the survey.

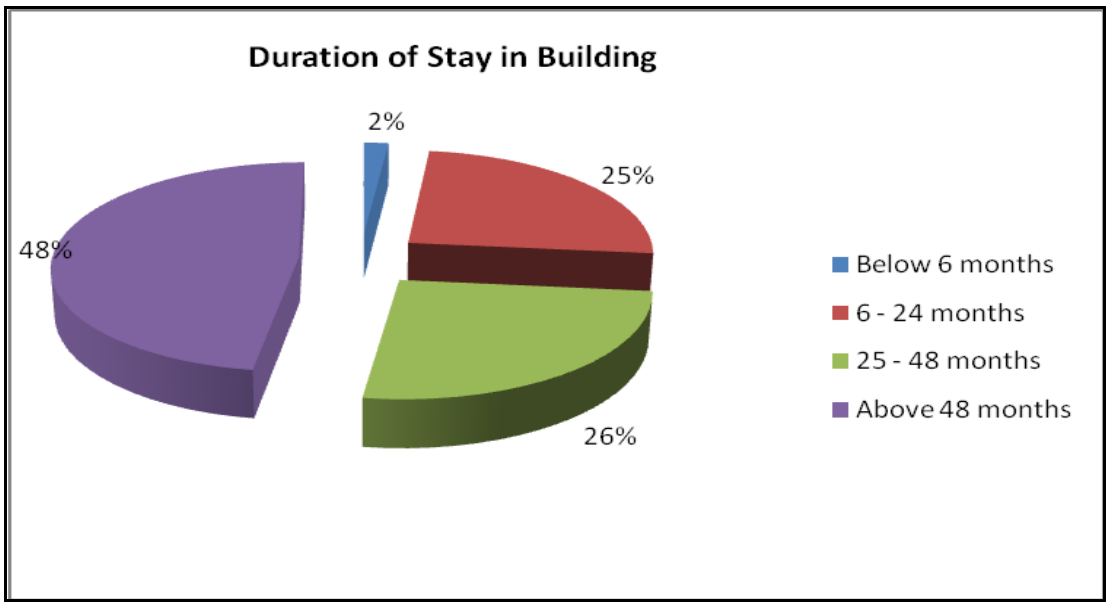

Figure 6.5: Length of Stay in Building

6.3.2.6 Gender:

Male headed households have a higher welfare than female headed household in North Central and South - South zones of Nigeria (Omonona, 2009). The result also shows that there are more males, accounting for 55% than females (44%), which is consistent with the National Population Commission (NPC, 1998) census figures of 1991, as reported by National Bureau of Statistics (NBS, 2009).

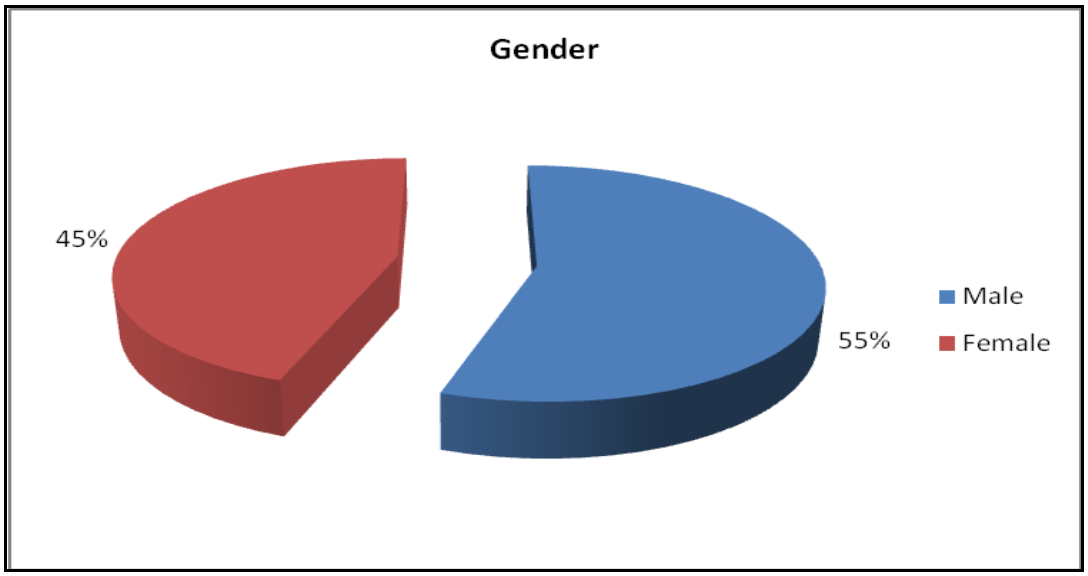

Figure 6.6: Gender

Both gender have been proportionally represented according to Sansom et al (2004), which states that in order to capture useful information from both male and female customers, it is desirable to ensure that both gender are proportionally represented.

6.3.2.7 Age Group:

Age is one of the factors contributing to the income level. Majority (43.9%) of the respondents are between the ages of 35-44 and 26.8% between the ages of 45-54 and 23.3% for age group 25-34. These age groups are considered as the working age group and vital to the economy of a nation. 3% accounts for the 55-64 age bracket, while the 16-24 age group constitute just 3%.

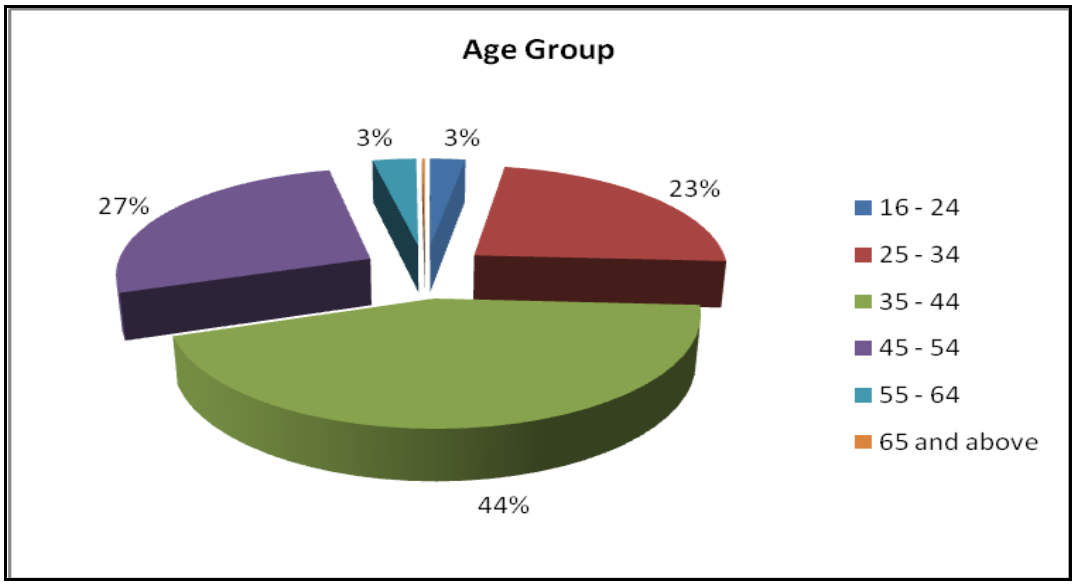

Figure 6.7: Age Group

6.3.2.8 Educational Attainment:

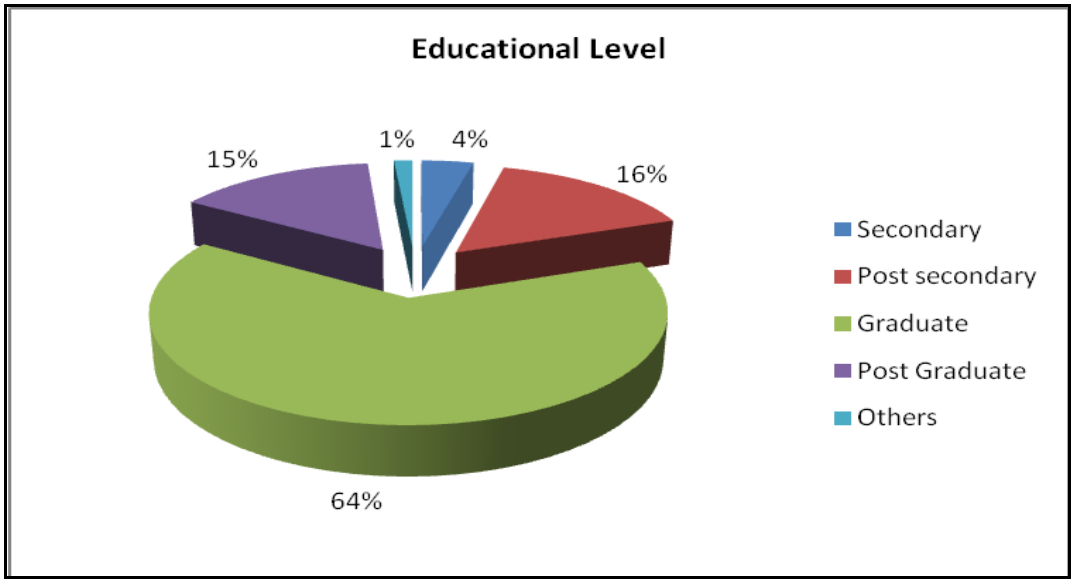

Figure 6.8: Educational Level

Households with formal education, have higher welfare than households without formal education. Educational level is said to correlate with income (Soludo, 2007). Most (64.25%) of the customers are graduates and can be classified as well-read, followed by 15.6% who attained post-secondary level such as ordinary National Diploma (OND) or National Certificate of Education (NCE). 14.9% attained postgraduate level, 3.9% have secondary school qualifications while 1.4% have no formal educational qualifications.

6.3.2.9 Annual Family Income:

According to Omonona (2009) as discussed in section 6.3.1, all the above listed variables have direct relationship and consequences with the annual family Income.

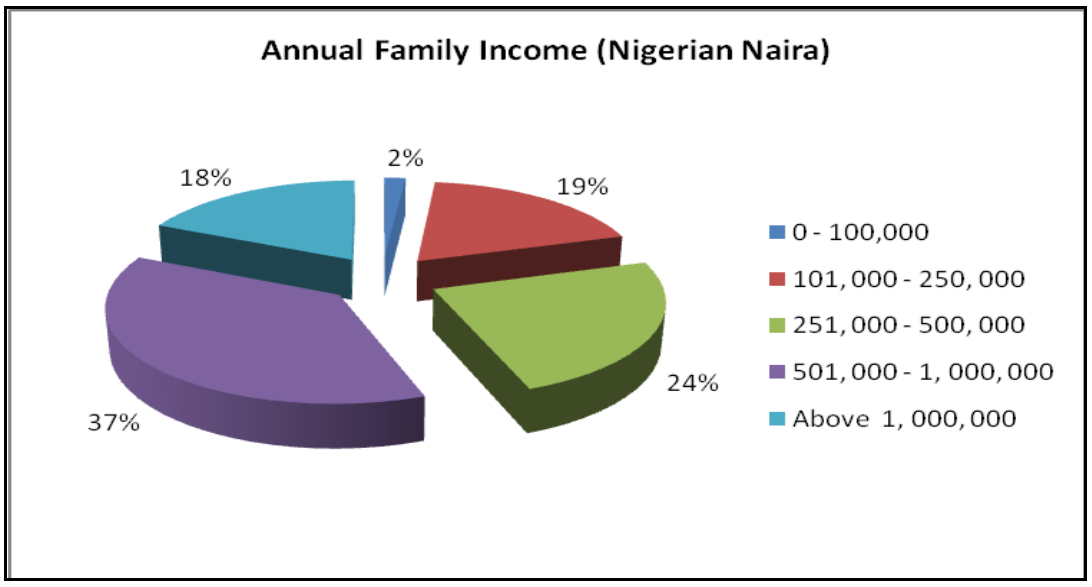

Figure 6.9: Annual Family Income.

The majority (37%) of the customers have annual family incomes ranges between 5001, 000 and 1, 000,000 Nigerian Naira (£2,000 - £4,000 equivalent), 24% have incomes between 251,000-500,000 Naira (£1,000 - £2,000), 19% earn between 101,000-250,000 Naira. While 2%, earn less than 100,000 naira, while only 18% of the respondents earn above 1,000,000 Naira.

6.3.3 Water Supply Characteristics/Willingness to Pay

In assessing the performance of FCTWB in terms of product and service quality (tangibles and intangibles), it is essential to classify these into dimensions that needs to be monitored. These include reliability, accessibility, communication, competence, courtesy, responsiveness, and credibility. Probing questions have been used which will give an insight into customer satisfaction and loyalty in the later sections. Analysis in figure 6.10 is been used to determine the pattern of water supply which is later cross tabulated with the overall satisfaction and reliability of water supply variables. It is also important to determine what percentages of the respondents use the public water mains as their main source of supply and also their supplementary sources. Only 88% of the respondent use the public water (FCTWB) mains as their main source, while the remaining (12%) use yard bore hole (6%), water vendors (popularly called Meruwa) (3%) and water tankers (2%) as their main source of water supply.

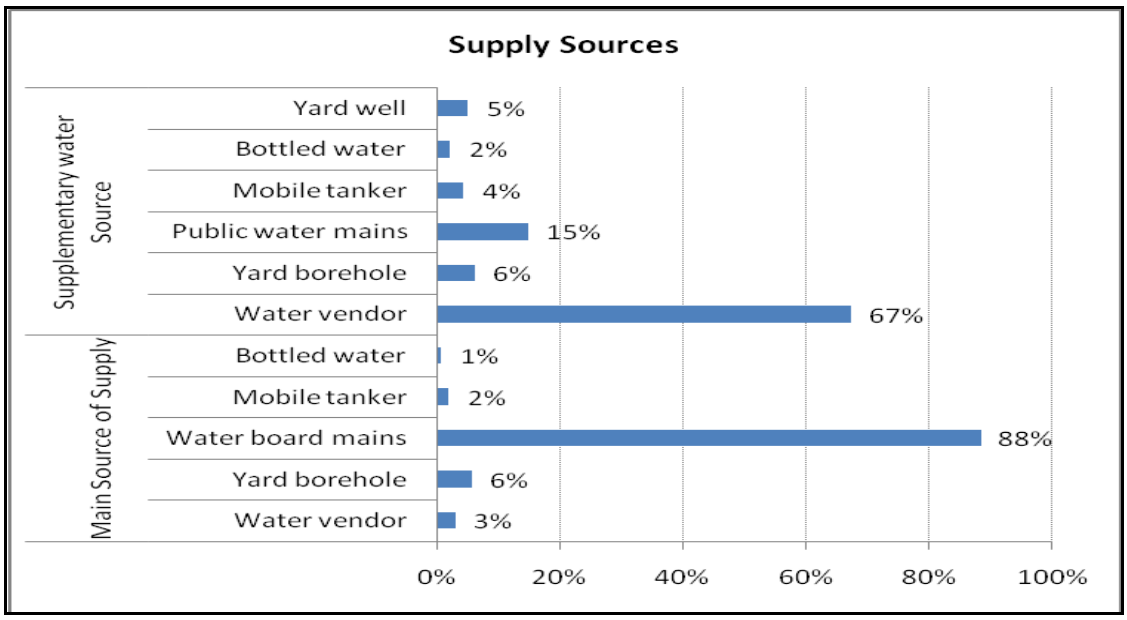

Figure 6.10: Main and Supplementary Sources of Water Supply

15% of the respondents, who use other sources as their main sources of supply, use the FCTWB water mains as their supplementary water source, while majority of them (67%) rely on the water vendor to supplement their water supply.

It would be interesting to know the pattern of water supply to FCTWB customers. Figure 6.11, shows that only 27% of the respondents get continuous water supply daily, while the remaining 73% get intermittent water supply.

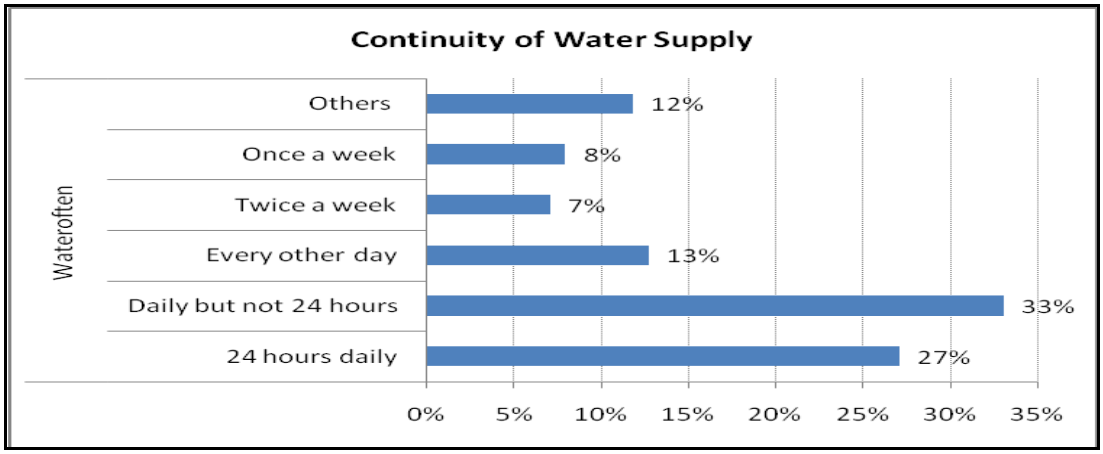

Figure 6.11: FCT Water Board Water Supply Intervals

These ranges from (33%) getting daily but not (twenty four hours) continuous supply, 13% get supply every other day and not twenty four hours, while 7% and 8% get

supply twice and once a week respectively. The remaining 12% do not get at all or get once in a while.

Water is not always available to the customers continuously. Since the water schemes need to be supported by the customers (beneficiaries) not just at the initiation stage, but also at the continuation stage through bill payments, which in turn leads to financial sustainability of water schemes.

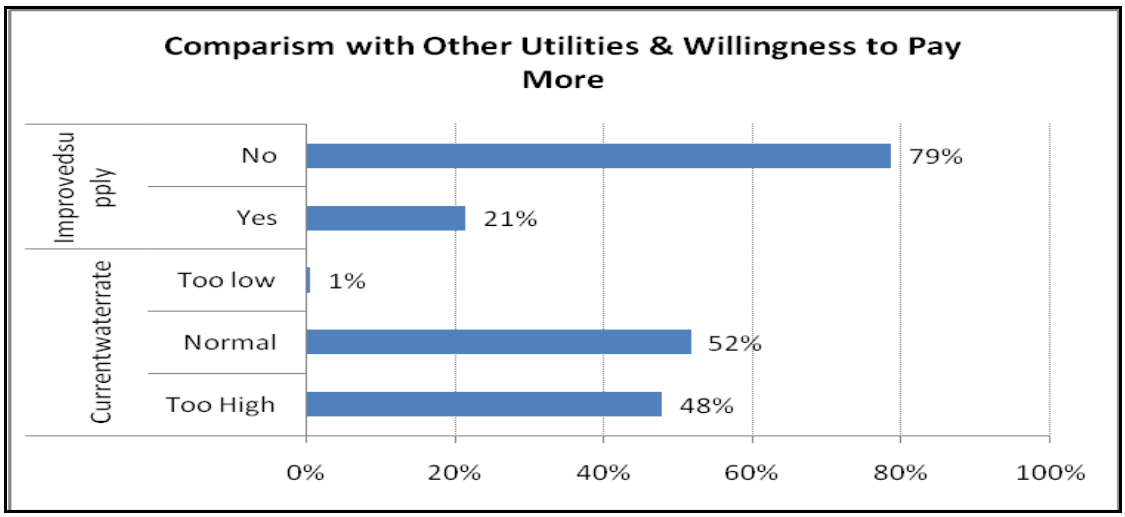

Figure 6.12: Perception of Water Supply

When asked to compare the rates they pay for water to other utilities like electricty and telephone, 52% of the respondents (figure 6.12) said it was normal, while 48% said the water rates were too high. Only 1% said it was too low. For an improved (continious) water supply, most (79%) of the customers are not willing to pay more than what they currently pay, while only 21% are willing to pay more.

6.3.3.1 Amount Willing to Pay:

For how much they are wlling to pay for an improved (Continious) water supply, most (67%) of the respondents (figure 6.13) are willing to pay less than 2,000 Naira monthly, which is the lowest in the ladder. 23% are willing to pay between 2,001-4,000, while just 7%, 2% and 1% are willing to pay between 4,001-6,000, 6,001-8,000 and 8,001-10,000 respectively.

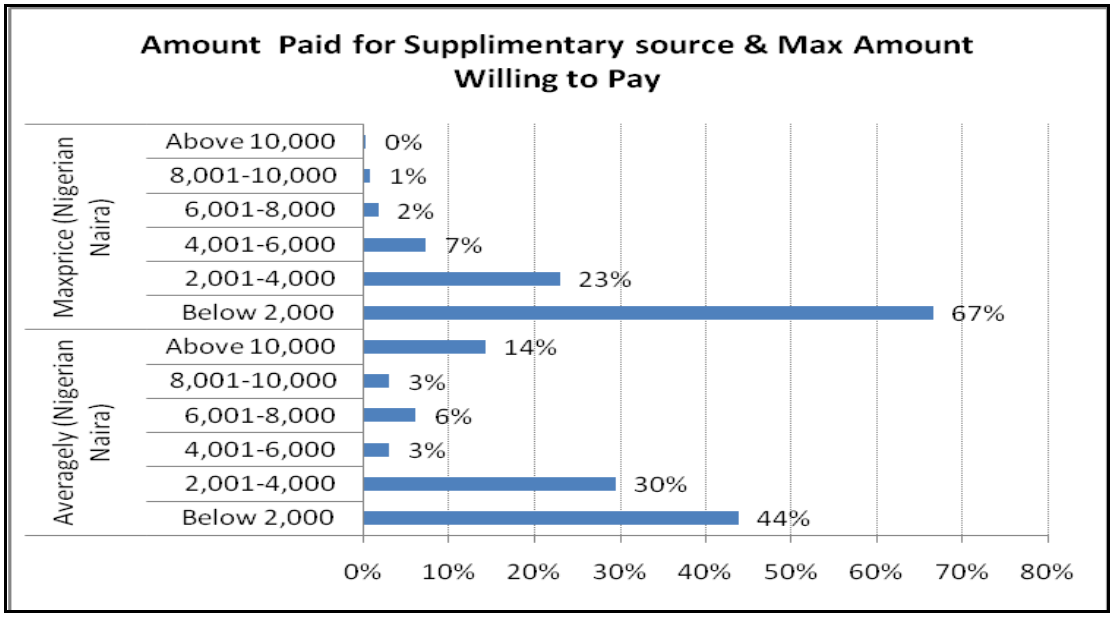

Figure 6.13: Maximum Amount Willing to Pay for an Improved Service

6.3.3.2 Areas Requiring Improvement:

In the area to be improved in figure 6.13, 76% of the respondents would like to see an improvement in all areas of operations and customer service, while 10% want improvement of reliability (continuity) of water supply.

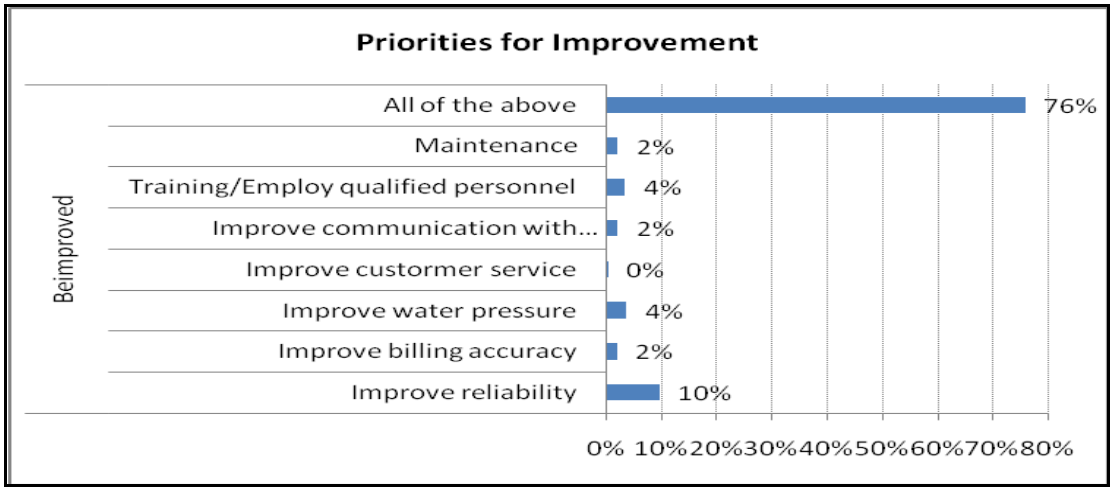

Figure 6.14: Priority Area to be improved.

While 4% want improvement in the water pressure, another 4% want FCTWB to retrain and employ qualified front line personnel. Similarly, 2% want an improvement in the communication with its customers and maintenance of its infrastructure.

6.3.4 Billing and Connection

6.3.4.1 Length of time connected to FCTWB mains:

The length of time a customer is connected would determine the customer service experience in terms of bill issuance and its accuracy by the FCTWB and payment by customers.

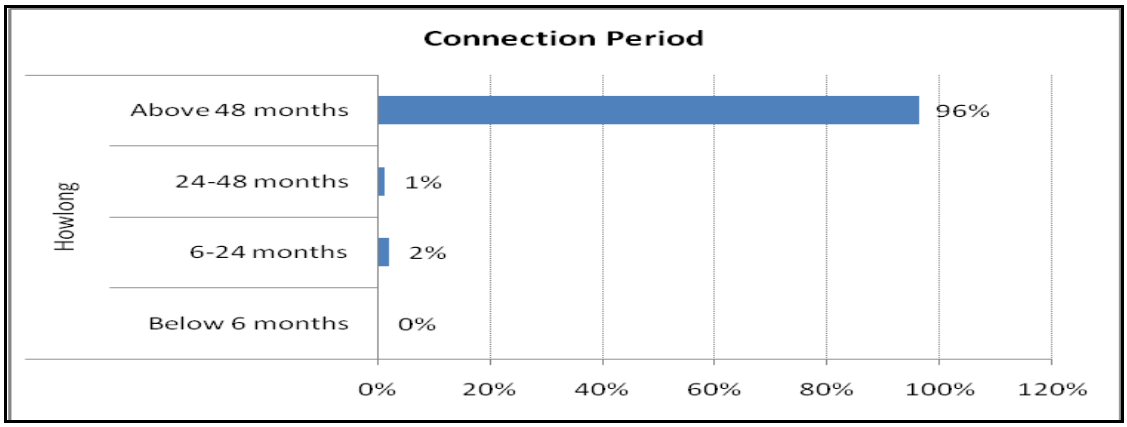

Figure 6.15: Length of Connection

In determining the service experience from length of connection, most (96%) of the respondents (from figure 6.15) have been connected for more than fourty- eight (four years) months, while 1% were connected within twenty-four to fourty-eight months (two years) and 2% connected between six to twenty-four months. Their judgement of service experience could be relied upon.

6.3.4.2 Type of connection and Tariff Structure:

The connection characteristics in figure 6.16, shows that 98% of the sample have domestic connection, while only 2% are commercial customers. This is consistent with section 6.3.2.3, which shows the status of respondents in the dwelling premises Managing Directors/Proprietor (1%) and Administrative Secretary (1%) accounting for 2% of the sample.

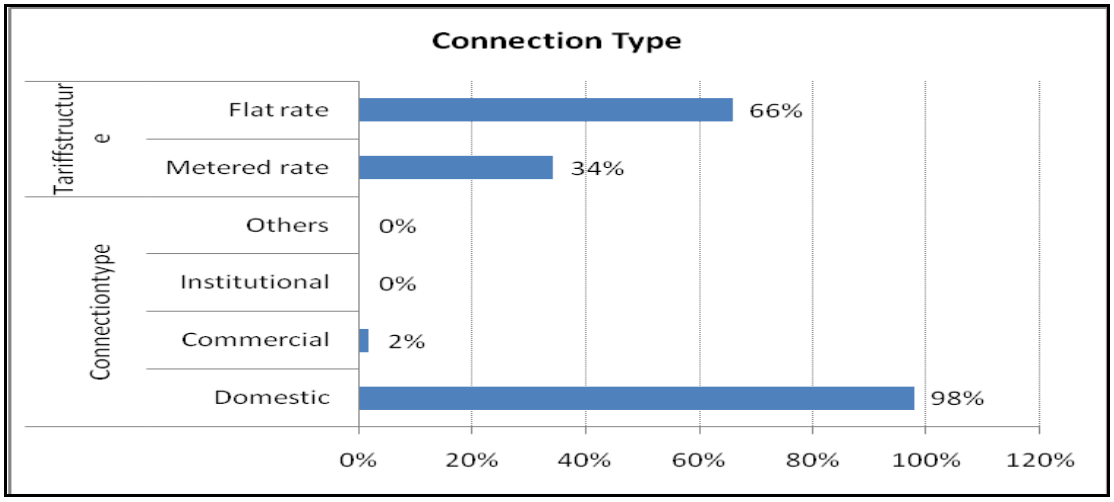

Figure 6.16: Type of Connection and Tariff Structure

6.3.4.3 Billing efficiency:

To determine the billing efficiency, Customers were asked if they receive water bills and the frequency of bill distribution. Those that are not billed where then asked why they were not billed.

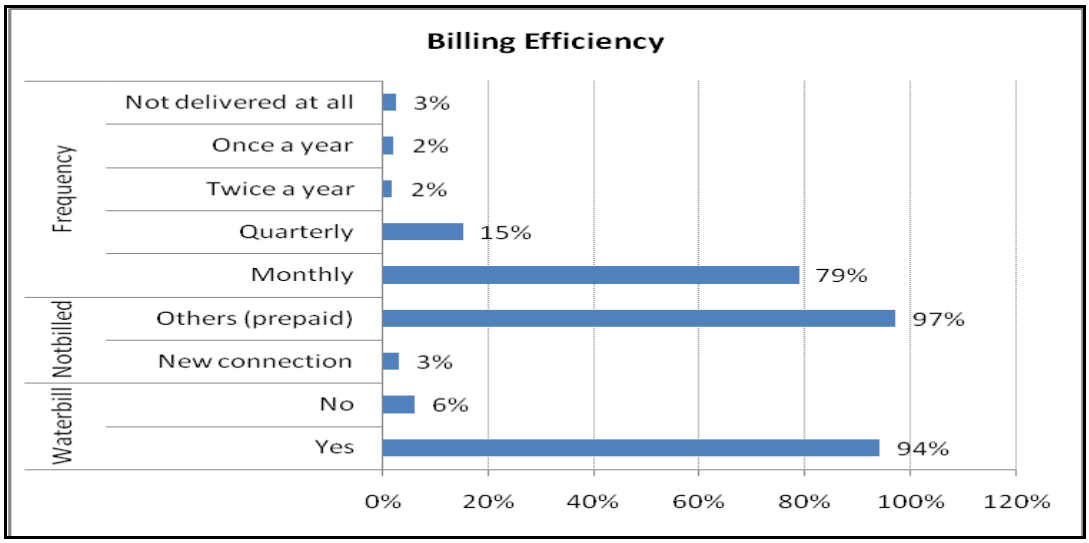

Figure 6.17: Efficiency of Billing

From figure 6.17, 94% of the respondents (sample) receive water bills, while 6% are not billed. Most (97%) of those not billed are on prepaid meter and the remaining 3% are new connections that have not been captured. Out of those on post service billing, 79% get their bills monthly, 15% quarterly, 2% twice a year, another 2% receive bills once a year, while 3% do not receive bills at all. This is consistent with the collection

efficiency ratio in section 5.5.4 and 5.6 that FCT Water Board is not efficient in revenue collection.

6.3.4.4 Settlement of Bills:

If customers are not accurately billed or services provided, customers will most likely to dispute their bills and refuse to pay for what they are not consumed. Respondents were asked if there were unsettled bills and why the bills were not paid. From figure 6.18, 42% of the respondents claimed they have unsettled bills which have not been settled, while only 52% settled their bills. It shows that customers are not happy with the customer service rendered in terms of billing, and by not settling their bills; revenue for operation and maintenance is lost in this process. This agrees with the constraints of the water supply sector discussed in section 2.2, referred to by Ajisegiri (2007) as the "vicious circle".

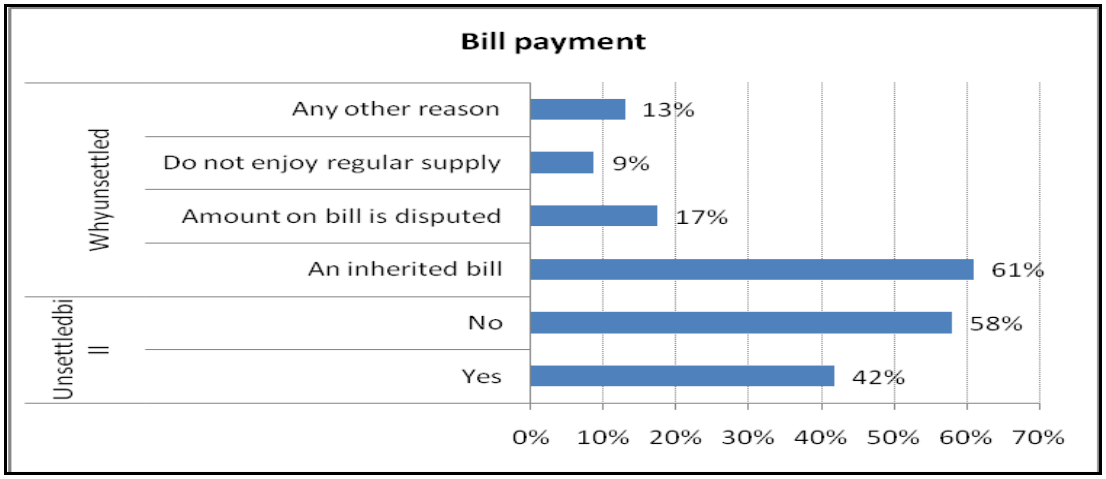

Figure 6.18: Bill payment

Most (61%) of the outstanding bills are inherited bills from the previous tenants, 17% dispute the accuracy of their bills, while 9% refused to pay because of intermittent water supply. The remaining 13% don't just think they should pay for water supplied.

6.3.4.5 Premise ever disconnected and reasons for disconnection:

When asked if they have recently experienced disconnection, 72% said they have not been disconnected, while 28% have experienced disconnection. From figure 6.19, 34% of those disconnected were due to indebtedness, 28% were wrongly disconnected, 23% for inherited bill left behind by the previous tenants and 15% others.

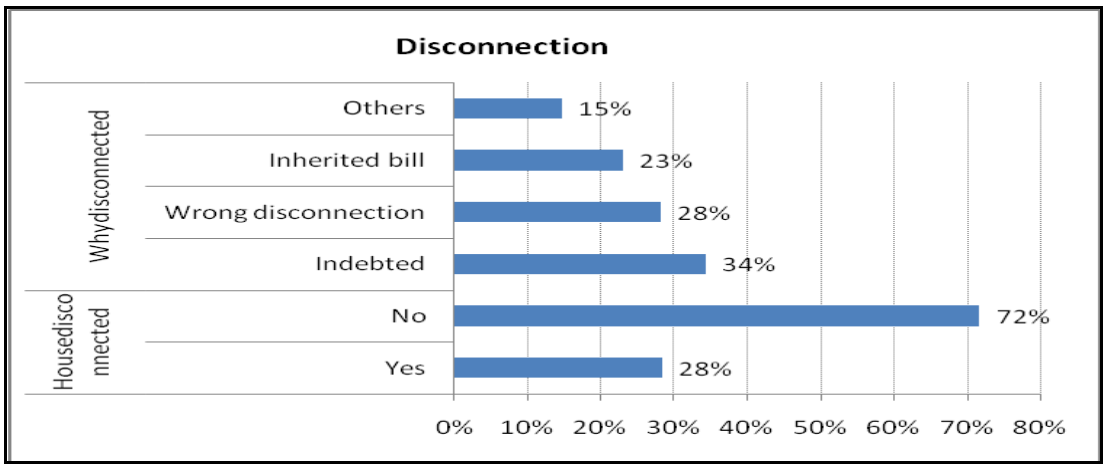

Figure 6.19: Pattern of Disconnection

6.3.4.6 Disconnection Notices:

Customers were asked if they were given notice before they were disconnected, and the analysis of their response is presented in figure 6.20.

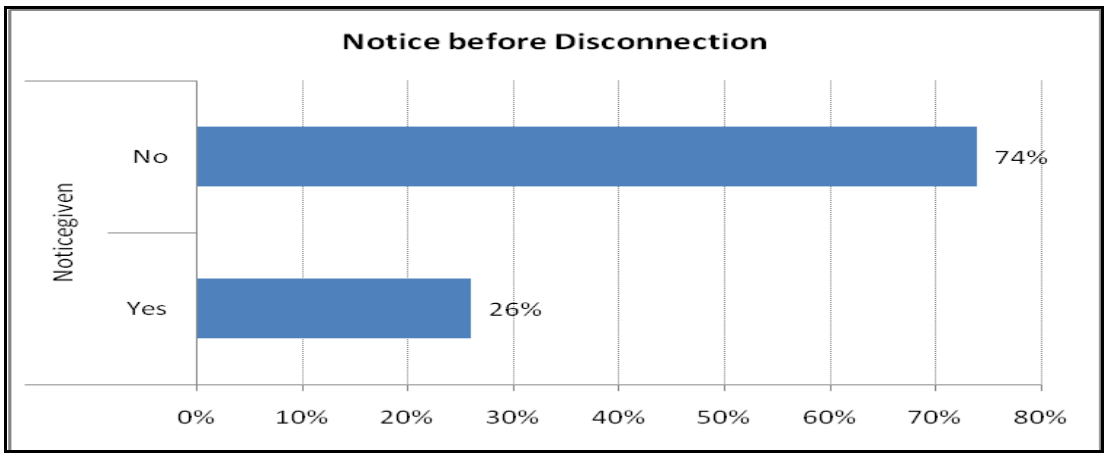

Figure 6.20: Notice before Disconnection

Most (74%) of those disconnected said they were not given notice of disconnection before they were disconnected, while 26% said they received notice of disconnection. This high level of indebtedness shows the bad service culture of FCT Water Board as discussed in section 2.6.3, having to resort to disconnection.

6.3.5 Complaint Management and Service Culture

Communication between customers and service providers are very vital to gauge their feelings through constant feedback. To understand the complaint behaviour of the customers, they were asked the following questions.

6.3.5.1 Officially complained to FCTWB Recently:

Customers were asked if they complained recently to FCTWB when they were dissatisfied with their services or when not satisfactory based on the continuous water supply, accurate billing and giving notice before disconnection.

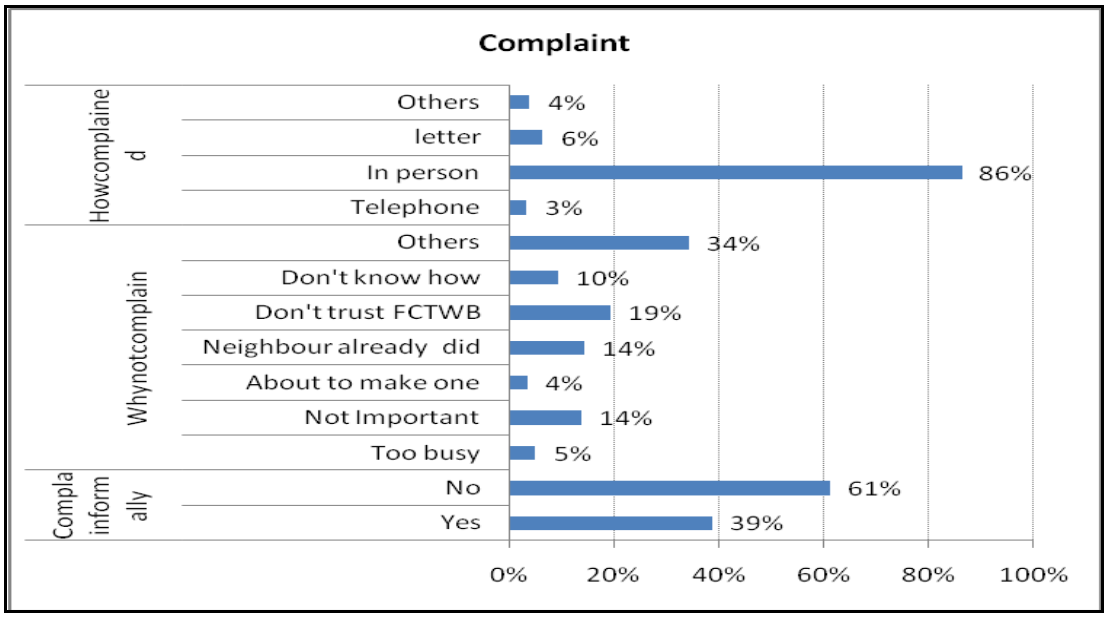

Figure 6.21: Complaint Behaviour of FCTWB Customers to Poor Service.

From analysis shown graphically in figure 6.21, only 39% of those who have issues as previously stated complained officially, while majority (61%) did not complain. This agrees with literature that public utility customers do not complain or voice out their satisfaction, when not satisfied with the service provided

6.3.5.2 Reason for not complaining:

From figure 6.21, 34% of those who did not complained (Others), said they complained unofficially to their neighbours or the wrong channel i.e. FCTWB representative on site. 10% said they don't know where and how to make a complaint, 19% said they don't have confidence in FCTWB or believe it will respond to their grievances. 14% said they did not complain because their neighbour already complained on the same or similar thing, 4% were about to make a complaint and 14% said they did not complain because it was not important, while the remaining 5% said they were too busy and did not have the time to complain.

6.3.5.3 Way of complaining, if you complained:

Figure 6.21 shows that most (86%) of those that complained did so in person, 3% by telephone and 6% through letter, while 4% (others) to the wrong persons through 'word of mouth'. The FCTWB customers believe that their complaint would only be responded to if they go in person, rather than telephoning or writing letters.

6.3.5.4 Promptly attended to by the operator when you telephoned:

Figure 6.22 shows the analysis output of the telephone contact when the respondents were asked if the telephone operator promptly attended to them when they called, advised on the time scale for dealing with their query or complaint, receive a call back within the time frame mentioned and if they have to repeat the call or visit on the same issue. When asked if they were promptly attended to when they called, 85% said they were promptly attended to while 15% said they were not promptly attended to.

6.3.5.5 Advised of the timescale for dealing with your query (complaint):

From figure 6.22, only 29% of the respondents that made telephone contact said they were told how long it would take to deal with their query or complaints, while most of them (71%) said they were not advised.

6.3.5.6 Receive a call back within the promised time scale:

Figure 6.22 shows that most (85%) of the respondents that made telephone contact said they did not receive a call back as promised by the FCTWB operator and only 15% said they received a call back.

6.3.5.7 Repeat of call or visit about the same issue:

Also, figure 6.22 shows that about 55% of those who made telephone contact said they had to repeat the call or visit the FCTWB on the same issue, while 46% said they did not have to call back.

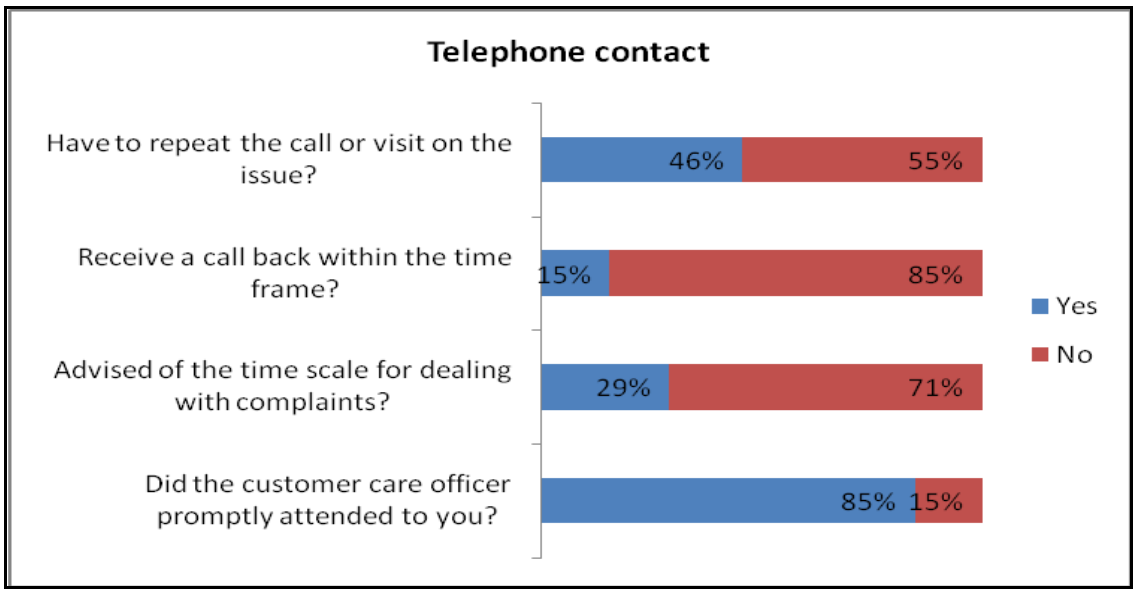

Figure 6.22: Telephone Complaint Experience

6.3.5.8 Number of times called or visit repeated:

Figure 6.23 shows that 21% of the respondents that repeated calls or visited the FCTWB in person said they visited only once before the query or complaint was resolved, 41% said they called or visited twice while 38% said they called and visited several times before the issue was resolved.

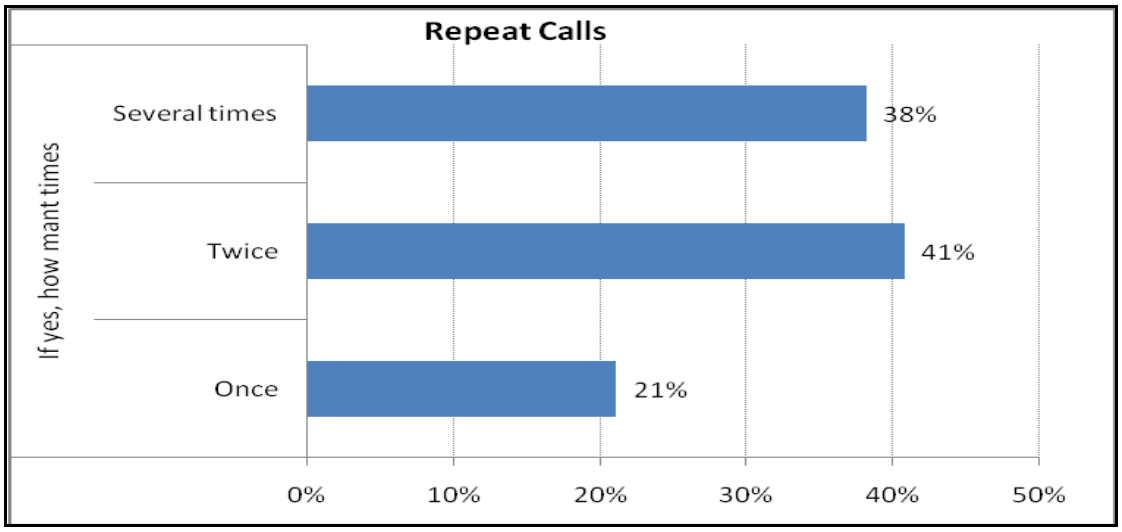

Figure 6.23: Response to Telephone Calls

6.3.5.9 Satisfaction or dissatisfaction with the telephone operator:

Figure 6.24 shows that 13% were very satisfied and 66% satisfied with the way the operator handled their call, while 5% and 17% were neither satisfied nor dissatisfied and dissatisfied respectively.

6.3.5.10 Satisfaction with the overall way in which the query or complaint was dealt with:

In figure 6.24, those who were very satisfied and satisfied with the operator reduced to 5% and 37% respectively from 13% very satisfied and 66% satisfaction from figure 6.23, while those who were neither satisfied nor dissatisfied increased to 8%, and those who were dissatisfied and very dissatisfied also increased to 42% and 8% respectively.

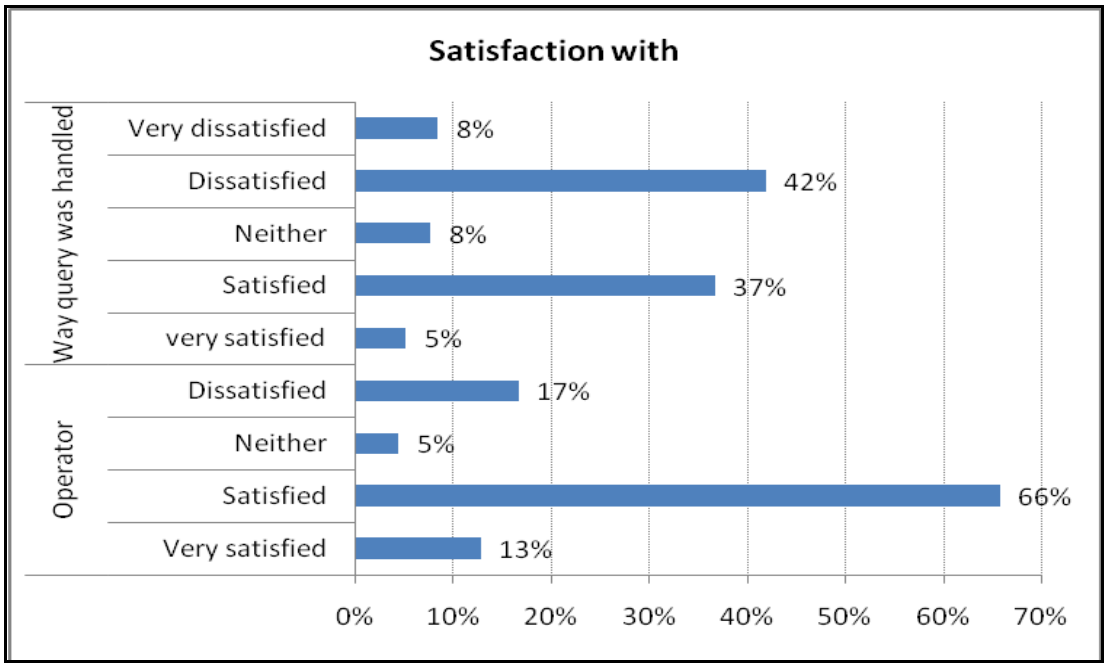

Figure 6.24: Telephone Complaint Perception

6.3.5.11 Acknowledging letter of complaint FCTWB:

The analysed data in figure 6.25 shows that most (90%) of the letters written by the respondents to The FCTWB about their dissatisfaction with services were not acknowledged, not to think of being responded to, while only 10% of the letters were acknowledged. This may be the reason customers prefer to go in person to lodge complaints.

6.3.5.12 Advice on how long it will take to resolve the complaint:

Analysis from figure 6.25, shows that most (84%) of those that wrote letter of complaint said they were not told how long it will take to resolve their complaint, while 16% were told how long it will take to resolve their complaints.

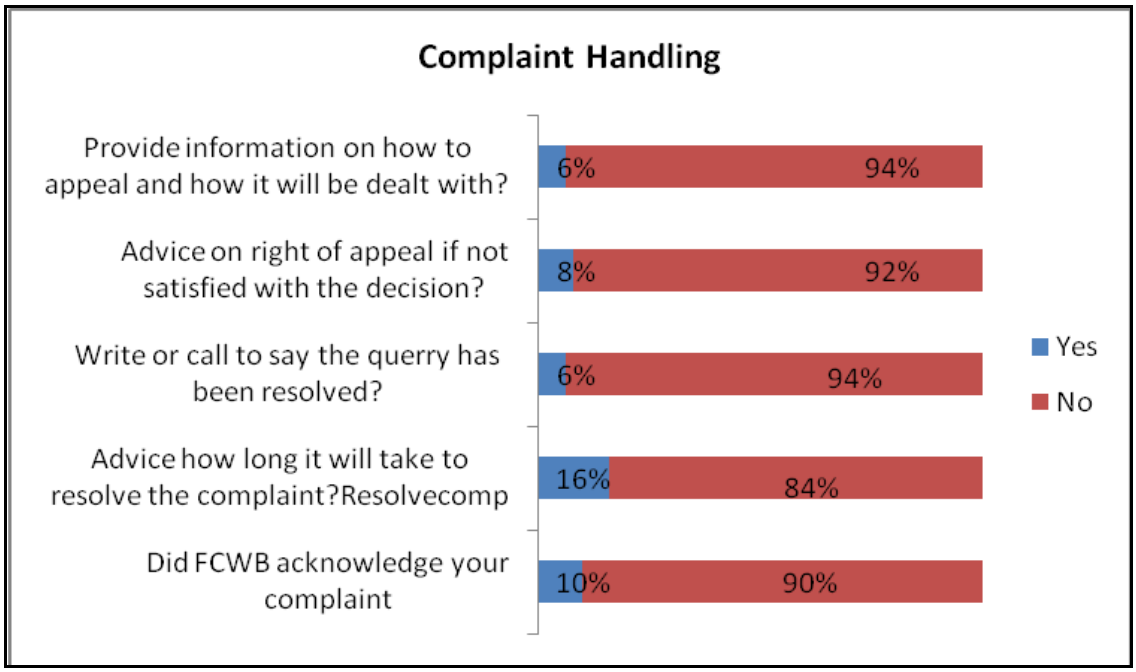

Figure 6.25: Letter Complaint

6.3.5.13 Write or call that your query has been resolved:

Majority (94%) of the respondents said they were not written to or called to be informed that their complaint has been resolved, while only 6% said they were written to or called.

6.3.5.14 Advised on the right of appeal if not satisfied with the decision:

Most (92%) of the respondents who wrote letters of complaint said they were not informed of their right to appeal if not satisfied with the decision taken, while 8% said they were informed.

6.3.5.15 Provide information on how to appeal and how appeal would be dealt with:

Only 6% said they were provided with information on how to appeal and how the appeal would be dealt with, while most (94%) of the respondents said they were not provided with information.

6.3.5.16 Time taken to resolve the complaint:

Majority (37%) of the respondents in figure 6.26 said it took more than twenty four weeks to resolve the complaint, and 34% said it took less than one week, while 14% said their complaint was resolved within one and two weeks. About 9% of the respondents got their complaints resolved within twelve to twenty four weeks, while 3% said it was resolved between two to four weeks and another 3% said it was resolved within four to twelve weeks.

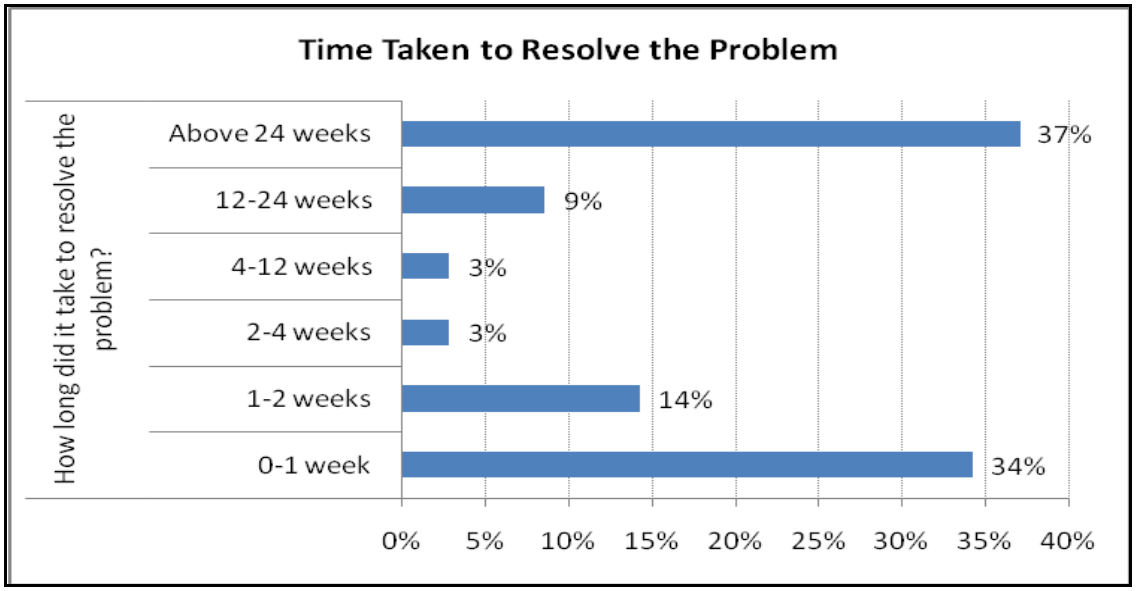

Figure 6.26: Response to written (Letter) Complaint

6.3.5.17 Informed by FCTWB that they would be coming when they visited:

Analysis from figure 6.27 shows that 53% were not informed by FCTWB that they would be coming when they visited, while 47% said they were informed that they would be coming.

6.3.5.18 Arrive punctually at the designated time:

Halve (50%) of the respondents who were visited by the FCTWB representative said they arrived punctually at the designated time, while 50% said they did not.

6.3.5.19 Have an acceptable appearance for the line of work to be done:

From figure 6.27, when asked if the FCTWB representative had an acceptable appearance for the line of work, 85% said they had an acceptable appearance while 15% said they did not have an acceptable appearance.

6.3.5.20 Have a polite and friendly manner:

90% of the respondents whose premises were visited by FCTWB representatives said they were polite and had friendly manners, while 10% said they were not polite and friendly to them when they visited.

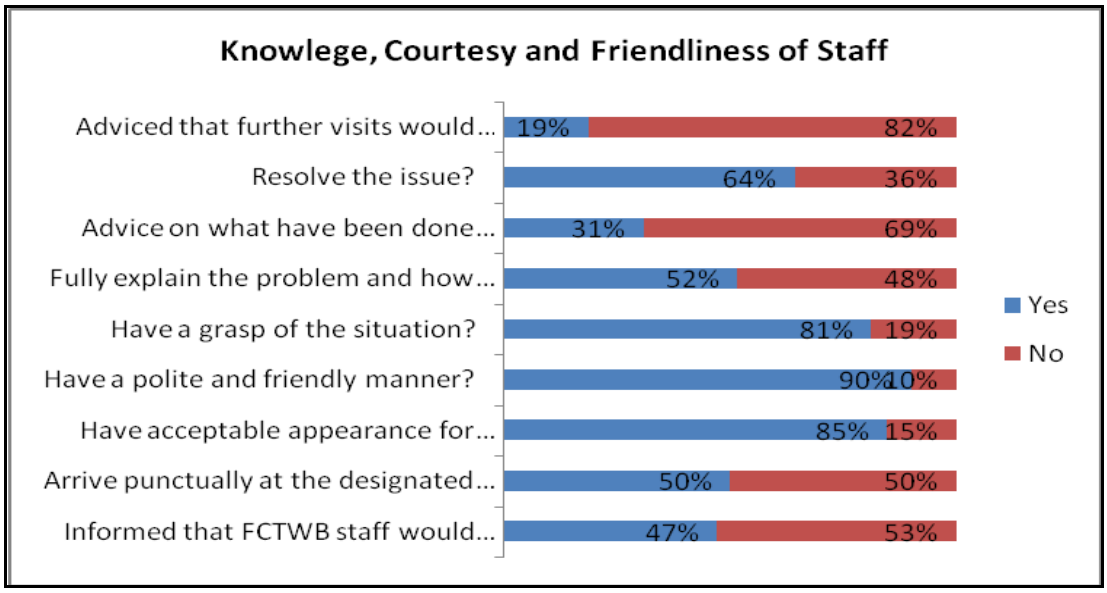

Figure 6.27: Visits to Premises by FCTWB Representative

6.3.5.21 Have a grasp of the situation at hand:

While most (81%) of the respondents that were visited by FCTWB representative said they had a grasp of the situation at hand then, 19% said they had no clue of the situation to solve it.

6.3.5.22 Fully explaining the problem and how it will be fixed:

From figure 6.27, 52% of the respondents said the visiting representative of FCTWB fully explained the problem at hand and how it will be resolved, 48% said they neither explained the situation nor how it would be handled.

6.3.5.23 Resolved the issue:

Majority (64%) of the respondents said their problem was resolved at the first visit of the FCTWB representative, while 36% of the respondents said their problems were not resolved during the visit.

6.3.5.24 Advised that further visit would be required, if it was not resolved:

82% of those whose complaint was not resolved during the first visit said that FCTWB representatives did not advise them that further visits would be required to resolve the complaint, while 18% said that they were informed that further visits would be required.

6.3.6 Customer Expectations (Important Requirements)

The analysis presented here is used to answer the first part of the research question, "*What are the important customer requirements and the level of satisfaction of public water utility customers*"? It is important to identify the important requirements and the priorities of the customers to determine their level of expectation. A ten point numerical scale was collapsed into a five point verbal importance scale to aggregate the responses from (five) representing very unimportant to (one) very unimportant in figure 6.28, using the same eight satisfaction attributes. Most of the customers rated helpfulness and interest, courtesy, and knowledge and trust of staff as the least important of their priorities on the same level. 8% said they are neither important nor unimportant, 38% said they were unimportant and just over half (54%) of the respondents said they (i.e. helpfulness and interest, courtesy and knowledge and trust of staff) are very unimportant.

Majority (61%) of the respondents agreed that physical appearance and colour of water supply is very important, while 34% said it is important. 3% said it is neither important nor unimportant, while the remaining 2% say it is unimportant. For billing accuracy and adequate pressure, 99% said they are very important for each and 1% each said they are also important. While 75% of the respondents said taste and smell of water supply are very important, and 25% said they are important. Most (95%) of the respondents think reliability (continuity) of water supply is very important, while the remaining 4% and 2% said it is important and unimportant, respectively. These are later ranked in the order of priority in further analysis section (6.8) under customer satisfaction index.

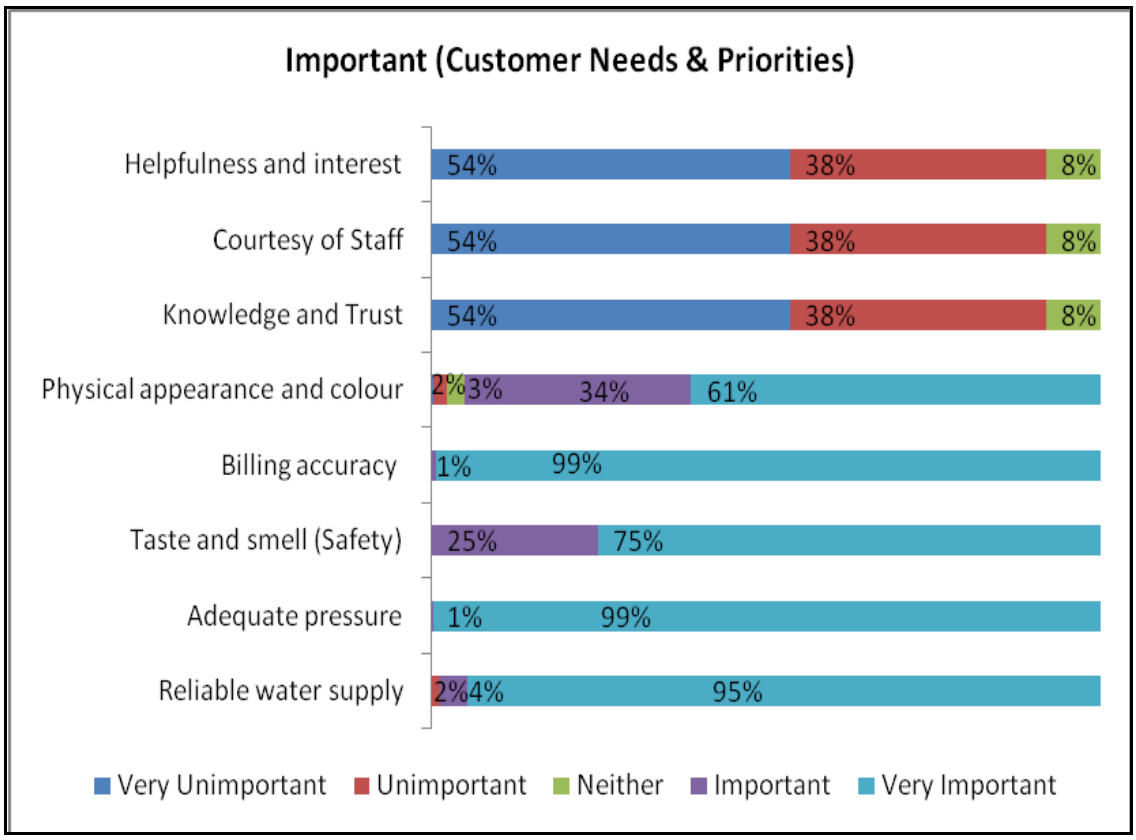

Figure 6.28: Aggregated Important Needs and Requirements

6.3.7 Customer Satisfaction Experience

6.3.7.1 Overall satisfaction/dissatisfaction with water supply service received:

This analysis is used to answer the second part of the research question, *"What are the important customer requirements and the level of satisfaction of public water utility customers*"? The detailed discussion on satisfaction measurement is reviewed in section 2.7.1. Figure 6.29 shows that only 20% of the respondents are very satisfied with the service received from FCT Water Board, while 53% were satisfied, bringing the total of all satisfied customers to 73%. 4% were neither satisfied nor dissatisfied, 21% were dissatisfied, while 3% were very dissatisfied. Some service areas are less satisfied with the service quality than others, and it will be interesting to see the satisfaction level of each of the ten service areas that make up the Federal Capital Territory (FCT) in figure 6.30.

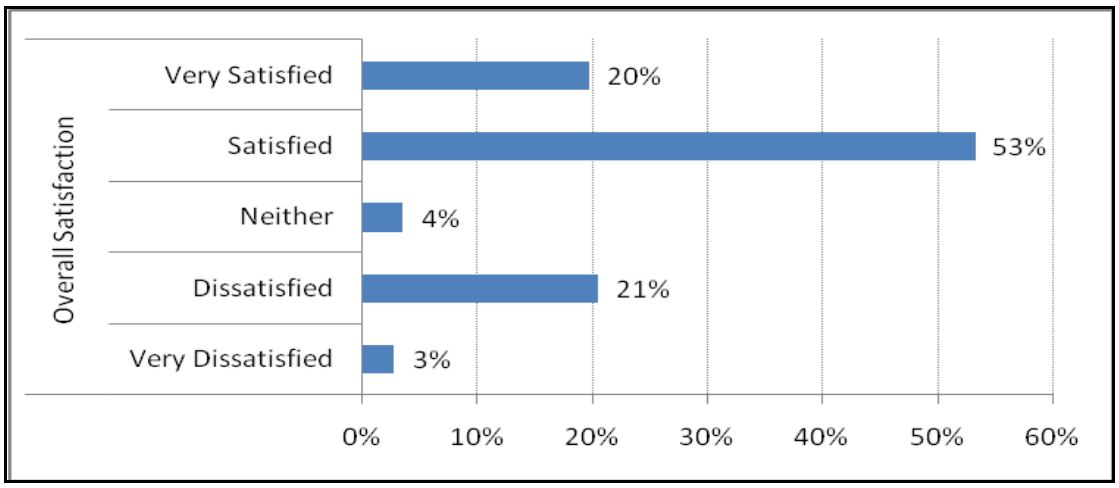

Figure 6.29: FCT Overall Customer Satisfaction

The service areas overall satisfaction is analysed in figure 6.30 to determine the areas with high and low satisfaction. Gudu service area recorded the highest overall satisfaction, with 100% satisfaction (33% very satisfied and 67% satisfied) with no dissatisfaction, while Gwagwalada service area recorded the least overall satisfaction of 3% (0% very satisfied and 3% satisfaction) and the highest dissatisfaction rate of 83% (73% dissatisfied and 10% very dissatisfied), with 13% neither satisfied nor dissatisfied. Wuse service area has 85% overall satisfaction (15% very satisfied and 70% satisfied) with 9% dissatisfaction (8% dissatisfied and 1% very dissatisfied). While Maitama service area recorded 57% satisfaction (13% very satisfied and 44% satisfied) and 41% dissatisfaction (37% dissatisfied and 4% very dissatisfied) with 2% were neither satisfied nor dissatisfied, Kubwa service area had 79% overall satisfaction (21% very satisfied and 58% satisfied) and 18% dissatisfaction level (15% dissatisfied and 3% very dissatisfied), 3% were neither satisfied nor dissatisfied.

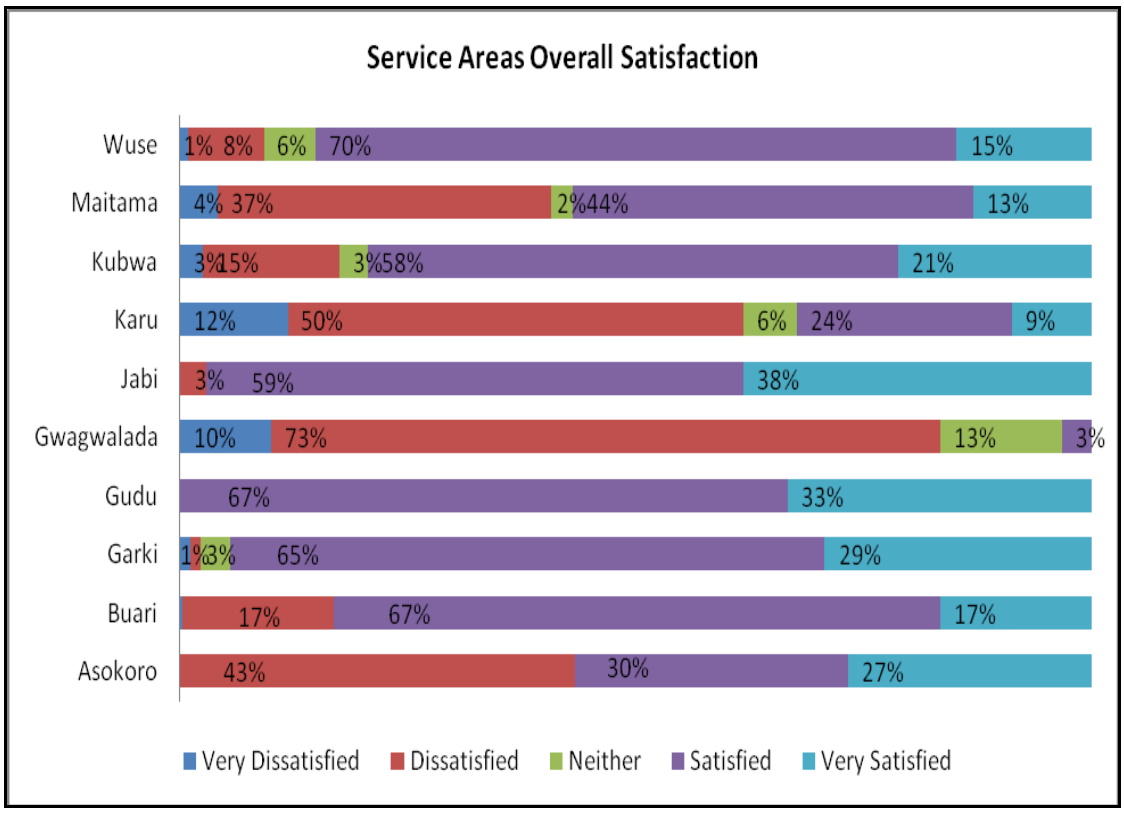

Figure 6.30: Aggregated Service Area Overall Satisfaction n=649

Karu service area recorded only 33% overall satisfaction (9% very satisfied and 24% satisfied) with 62% dissatisfaction level (50% dissatisfied and 12% very dissatisfied), while 6% of the respondents were neither satisfied nor dissatisfied. Jabi service area has the second highest overall satisfaction recording 97% overall satisfaction (38% very satisfied and 59% satisfied) with 3% dissatisfaction level, while Garki service area recorded 94% overall satisfaction (29% very satisfied and 65% satisfied) and 2% dissatisfaction (1% dissatisfied and 1% very dissatisfied) with 3% neither satisfied nor dissatisfied. Buari service area has 84% overall satisfaction (17% very satisfied and 67% satisfied), while 16% were dissatisfied. And Asokoro service area has 57% overall satisfaction (27% very satisfied and 30% satisfied) with 43% dissatisfied.

6.3.7.2 Overall Satisfaction against Attributes:

Figure 6.31 shows the analysis of satisfaction attributes presented in a graphical form for easy understanding. The aggregated chart of FCT overall satisfaction attributes shows that most (98%) of the respondents were very satisfied with the helpfulness and interest that the FCTWB representatives showered on them as a valued customer; only 2% were dissatisfied. For the courtesy of staff towards customers, 52% (6% very satisfied and 46% satisfied) were satisfied, 33% were neither satisfied

nor dissatisfied, while 14% and 2% were dissatisfied and very dissatisfied respectively.

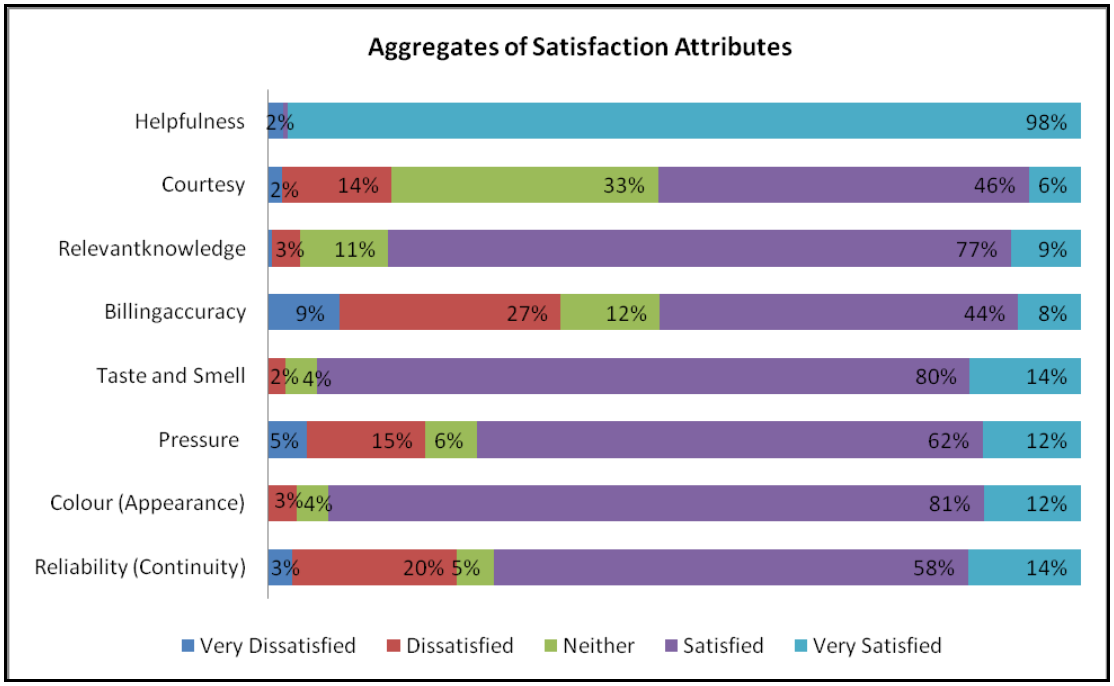

Figure 6.31: Aggregated FCT Customer Satisfaction of Attributes

86% (9% very satisfied and 77% satisfied) were satisfied with the relevant knowledge and trust of staff they have dealt with, 11% were neither satisfied nor dissatisfied, and while 3% were dissatisfied and only 1% are very dissatisfied. For the accuracy of billing, 52% are satisfied (8% are very satisfied and 44% satisfied); while 12% are neither satisfied nor dissatisfied, 27% are dissatisfied and 9% very dissatisfied. The taste and smell attribute recorded 94% satisfaction level (14% very satisfied and 80% satisfied), with 4% neither satisfied nor dissatisfied and 2% dissatisfied. While 74% (12% very satisfied and 62%) are satisfied with the pressure of water supplied, 20% (15% dissatisfied and 5% very dissatisfied) and 6% were neither satisfied nor dissatisfied. Colour and appearance recorded 93% satisfaction level from the respondents (12% very satisfied and 81% satisfied), while 4% and 3% were neither satisfied nor dissatisfied and dissatisfied respectively. Reliability recorded 72% (14% very satisfied and 58% satisfied), 5% were neither satisfied nor dissatisfied, while 20% and 3% were dissatisfied and very dissatisfied respectively.

6.3.8 Customer Loyalty

6.3.8.1 Change in opinion about FCTWB:

After the importance and satisfaction scores, the respondents were asked if their opinion have changed.

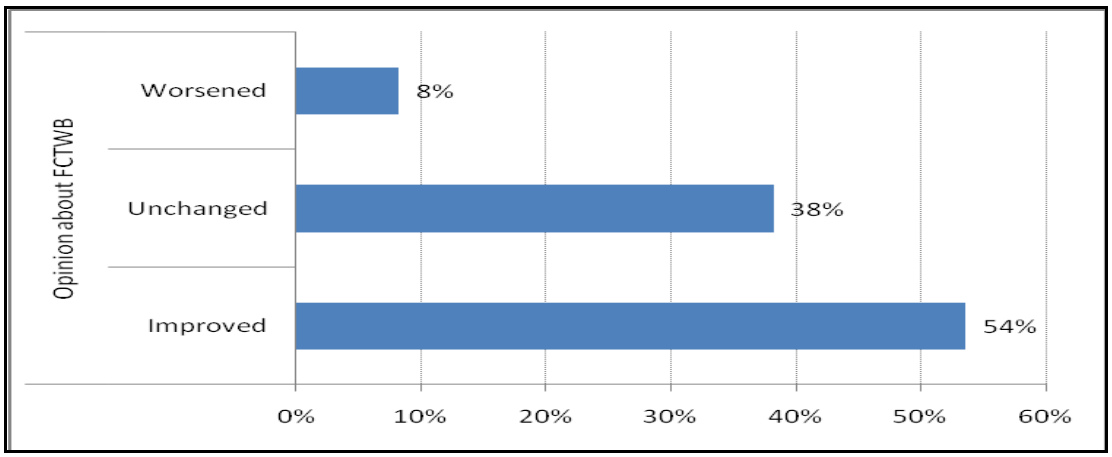

Figure 6.32: Opinion of FCTWB at the end of the survey.

Figure 6.32 shows that almost half (54%) of the respondents changed their opinion in favour of FCTWB, while the opinion of 38% against the FCTWB remain unchanged with 8% worsened.

6.3.8.2 Choice to remain as FCTWB customer or a with new water service Provider:

The result in figure 6.33 shows that most (58%) of the respondents are likely to remain, while only 23% are very likely (sure) to remain even if given a choice to leave for an alternative water supply provider. Only 12% of the respondents are not likely to remain with FCTWB if given the choice of another service provider, while 3% are not very unlikely and 3% are not sure if they would remain. It shows that only 23% of the respondents are very satisfied with services provided and would remain FCT Water Board customer, even if they have a choice of alternative water service provider.

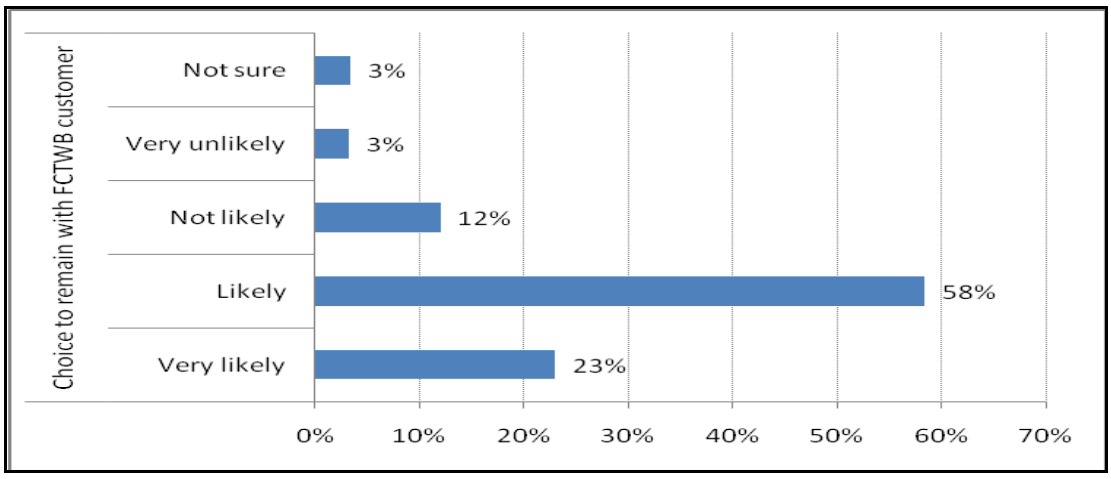

Figure 6.33: Choice to Remain with FCTWB

6.3.8.3 Recommending FCTWB to Friends and family:

If customers are very satisfied, they would be loyal customers and would very likely remain with FCTWB, even if there are alternatives to FCTWB. They would therefore be willing to recommend FCTWB to close friends and relatives. Figure 6.34 shows that only 29% are very likely to recommend FCTWB to their friends and family members, while 56% are likely to recommend. 9% are not likely to recommend FCTWB, 3% and 3% are very unlikely and not sure of recommending FCTWB to friends and family respectively. Only Loyal customers who are satisfied with the services provided by an organisation are more likely to recommend it to family members and friends for patronage. They would not want loved ones to go through the experience they have gone through.

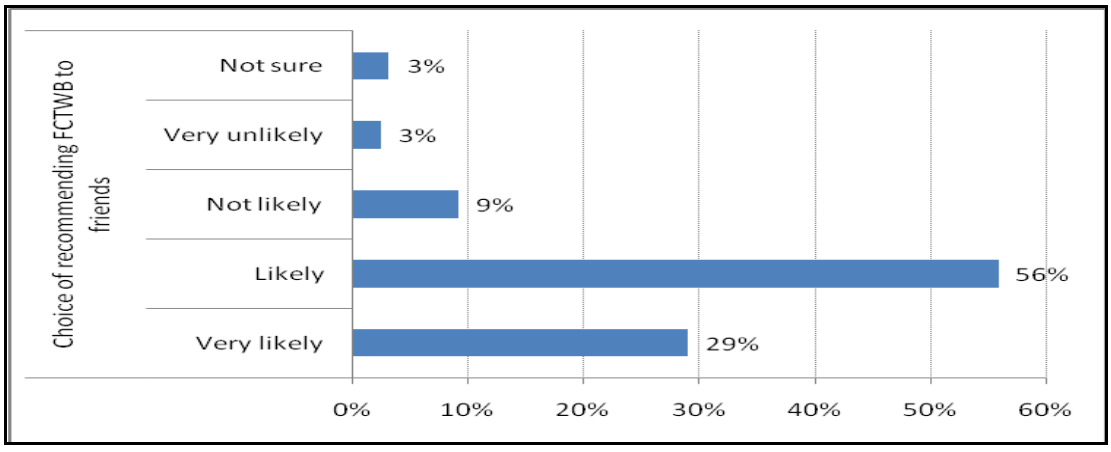

Figure 6.34: Choice of Recommending FCTWB to Friends and Family

6.4 Cross tabulation and Chi-square Test of Independence

This technique is also known as non-parametric test, is ideal for exploring the association between two or more categorical variables, which are measured on nominal and ordinal scales (Pallant, 2007). Crosstabs in the SPSS 16 program is used to produce two way tables which show the relationships between two variables, while the chi-square test helps determine whether or not there is a statistically significant association between two variables. The test provides a significant probability (*p*) value for the association and it is known as Asymp. Sig in the SPSS Crosstabs output (Pallant, 2007; Bryman and Cramer, 2005). To be a significant association, and not a product of random chance, small values of *p* are needed. The value of *p* obtained, is then compared with the chosen level of significance. The choice of level of significance depends on the confidence level required before declaring the existence of an association. In accordance with Pallant (2007), 95% level has been adopted. This means that there has to be a *p* value of 0.05 or less, for a corresponding 95% chance of there being an association.

The normal choices of significant levels are:

95% level = $p<0.05$

99% level = $p<0.01$

99.9% level = $p<0.001$

If *p* is larger than the chosen significance level, then the variables are said to be statistically independent and no association can be confirmed. The SPSS Crosstabs procedure which has been used has an option for Chi-square, which generates a Chi-square test report showing the significant level. Chi-square tells if the table could be due to chance or if there is some real association between the two variables. A Chi-square test report may confirm the existence of a statistically significant association between two variables, but it will not indicate how strong the association is or which cells are most responsible for the deviation from the expected, further statistics is needed to get a measure of strength of any association and direction.

6.4.1 Test of Association between Demographic Variables

The association between two categorical variables i.e. demographic/socio-economic and overall satisfaction, is used to construct a two-way table known as test of independence. Chi-square test of independence is used to determine if there is a

relationship between demographic and socio-economic variables i.e. classification of area versus income. Omonona (2009) identified some factors (size of household, marital status and type of family, dwelling type, safe access to water and sanitation gender, age, education) that correlate with poverty and their influence on household. Income which is the major determining factor of poverty has been included in the demographic variables to determining the socio-economic status of the sample in the contingency table of appendix 8a using SPSS release 16 and 17.

Table 6.5: Chi-square Test of Independence for Demographic Variables

	Classification by Income	Dwelling Type by income	Status in Building by Income
Pearson Chi-square	43.374 [a]	87.397 [a]	1.110E2
Likelihood Ratio	42.080	90.238	97.032
Valid Cases	649	649	649
df	8	12	16
Asymp. Sig.(2-Sided)	0.00	0.00	0.00

Subjecting the data obtained from the cross tabulating classification of area, dwelling type, status in building and income to a test of significant association using chi-square test, the result shows a highly significant level *p*=value of 0.00.

Table 6.6: Chi-square Test of Independence for Socio-economic Variables

	Household Size by Income	Duration of stay by Income	Gender by Income	Age by Income	Education by Income
Pearson Chi-square	16.405 [a]	66.701 [a]	35.852 [a]	2.037E2	1.525E2
Likelihood Ratio	16.676	67.114	36.068	139.482	140.545
Valid Cases	649	649	649	649	649
df	8	12	4	20	16
Asymp. Sig.(2-Sided)	0.37	0.00	0.00	0.00	0.00

This indicates that there is a 100% chance that there is a link or relationship between classification area and income among 649 valid cases.

6.4.1.1 Classification of Area by Annual Family Income

Frequency tables of two variables presented simultaneously are called contingency tables (Brace et al, 2009). This shows the annual income of respondents based on the classification areas. From contingency table in the appendix 9B, 37.3% (242) of the respondents income are within the 501,000-1,000,000 income bracket, which is consistent with the demographic frequency table in appendix 9.b; 24.0% (156) fall within the 251,000-500,000 (£1,000-£2,000) bracket, 18.6% (121) fall within 101,000-250,000, 18.3% (119) earn above 1,000,000, while the least (1.7%) of the respondent fall within the 0-100,000 income bracket. Figure 6.35 shows that the majority (58.3%) of respondents within the low density area have an annual income of above 1,000,000, 33.3% are within 501,000-1,000,000, and only 8.3% are within 251,000-500,000 while non-earn below 251,000.

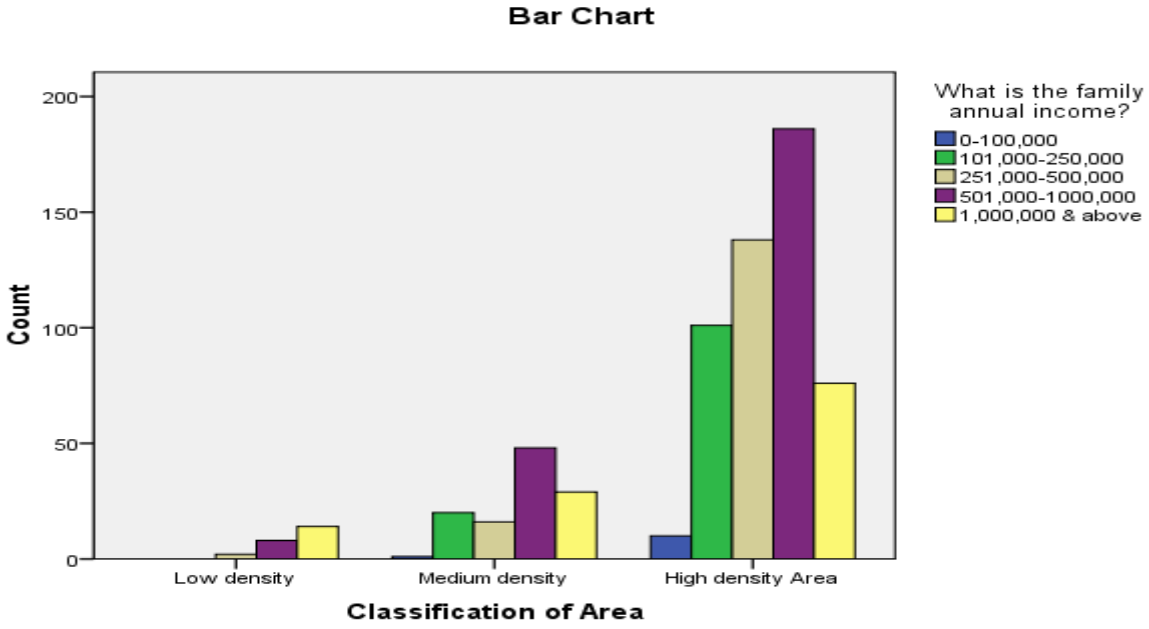

Figure 6.35: Classification of Area by Annual Family Income

Within the medium density area, 42.5% of the respondents earn between 501,000-1,000,000, followed by 25.4% who earn above 1,000,000. 14% and 17.5% earn between 251,000-500,000 Naira and 101,000-250,000 respectively, while a tiny proportion (0.9%) earn below 100,000. Whereas in high density area, the largest

proportion (36.4%) of respondents earn between 501,000-1,000,000, while only 14.9% earn above 1,000,000, 27%, 19.8% and 2.0% earn between 251,000-500,000, 101,000-250,000 and 0-100,000 respectively.

Testing to see if there is a link between area classification and annual income, a chi-square test of significance carried out through SPSS 16 software output in table 6.5, show a 100% confidence level with the P value of 0.00 < 0.05. This means that there was less than 5% chance that the result was a coincidence. The null hypothesis that there is no relationship between both variable is rejected in favour of the alternative. Four cells (26.7%) have an expected count of less than 5, while the minimum expected count is .41.

6.4.1.2 Types of Dwelling versus Annual Family Income:

After the classification of areas based on income, it become necessary to also classify types of dwelling by income to determine if there is a relationship between the two variables as it is important to identify if income has an influence on the satisfaction and requirements of customers (Poor and the non- poor).

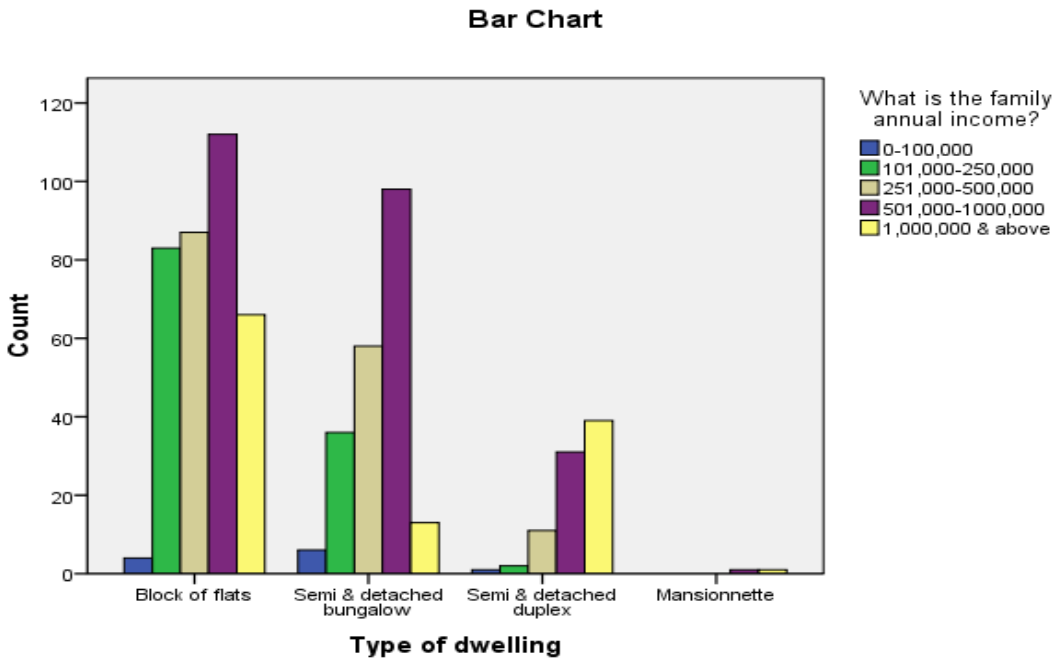

Figure 6.36: Type of Dwelling by Annual Family Income

The result from tabulation table in the appendix 9C and graph in Figure 6.36, shows that most (31.8%) of those living in the block of flats earn less than 1,000,000

(between 501,000-1,000,000), followed by 24.7% who earn between 251,000-500,000. 23.6% of those living in block of flats earn 101,000-250,000, while 18.8% and 1.1% earn above 1,000,000 and between 0-100,000 respectively. Again, the *p*=value is significant at 0.00< 0.05, which suggests that there is a 100% chance that there is an association between dwelling type and annual family income among 649 valid cases.

6.4.1.3 Household Size by Annual Family Income:

Testing to see if there is an association between the size of a household and family income from table 6.6, the *p*=value is not significant at 0.037> 0.05. When compared with the significant level choice, this means that there is less than 63% chance of an association between household size and family income among 649 valid cases. Although figure 6.37 shows higher number of high income earners within the above 5 household size compared to others, household size on its own, does not determine the income of the family.

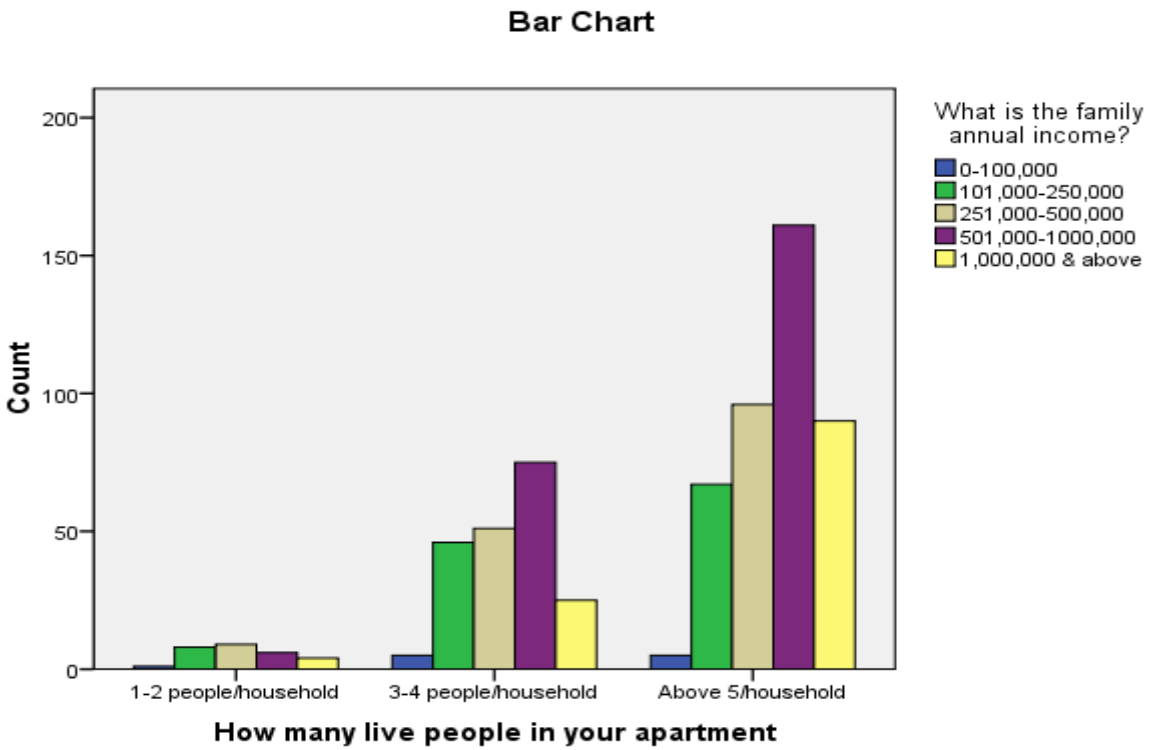

Figure 6.37: Family Size by Annual Family Income

6.4.1.4 Gender by Annual Family Income:

Appendix 9d as illustrated in figure 6.38 shows that majority (40.9%) of the male population earn between 501,000- 1,000,000, while only 19.2% earn above 1,000,000. 27.9% and 11.1% earn between 251,000-500,000 and 101,000-250,000 respectfully, while only 0.8% of the male earn 100,000 and below.

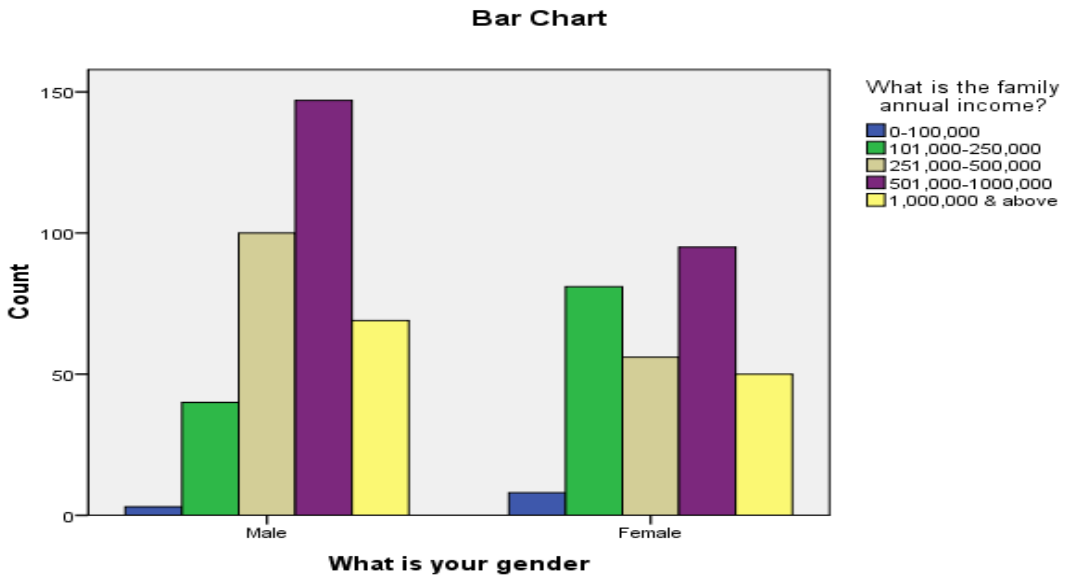

Figure 6.38: Gender by Annual Family Income

Those who earn 100,000 and below on the female side are 2.8%, 2% higher than the male lowest earners, and 17.2% (2% less than that of the male) earn above 1,000,000, while majority (32.8%) of the female earn between 501,000-1,000,000. This is 8.1% less than that of the male. Using the majority, lowest and highest earners as an indicator, it could be said that the males are more likely to earn higher income than the females. The relationship between gender and annual family income is highly significant with the *p*=value 0.00< 0.05 among 649 valid cases. The null hypothesis is rejected and the alternative hypothesis is accepted that there is a relationship between gender and income.

6.4.1.5 Age Group by Annual Family Income:

From appendix 9e in the six age categories, majority (88.2%) of the age 16-24 earn above 1,000,000, while the least (5.9%) earn between 251,000-500,000 Naira. In the 25-34 age category, the majority (40.4%) earn between 101,000-250,000 Naira, the least (3.3%) earners earn below 100,000, while the only (15.2%) earn above

1,000,000. In the age 35-44 category, majority (43.5%) of the age group earn between 501,000-1,000,000, 1.4% earn below 100,000, while only 12.3% earn above 1,000,000. And in the age 45-54 categories, majority (44.8%) of them earn between 501,000-1,000,000, the least earners (5.7%) earn between 101,000 - 250,000 Naira, while only 24.1% earn above 1,000,000. While in the age 55-64 category, 33.3% earn between 251,000 - 500,000 Naira, another 33.3% earn between 501,000-1,000,000. Only 19% earn above 1,000,000, while the lowest earners (9.5%) earn between 101,000 - 250,000 Naira. All (100%) the senior citizen categories (65+) earn below 100,000.

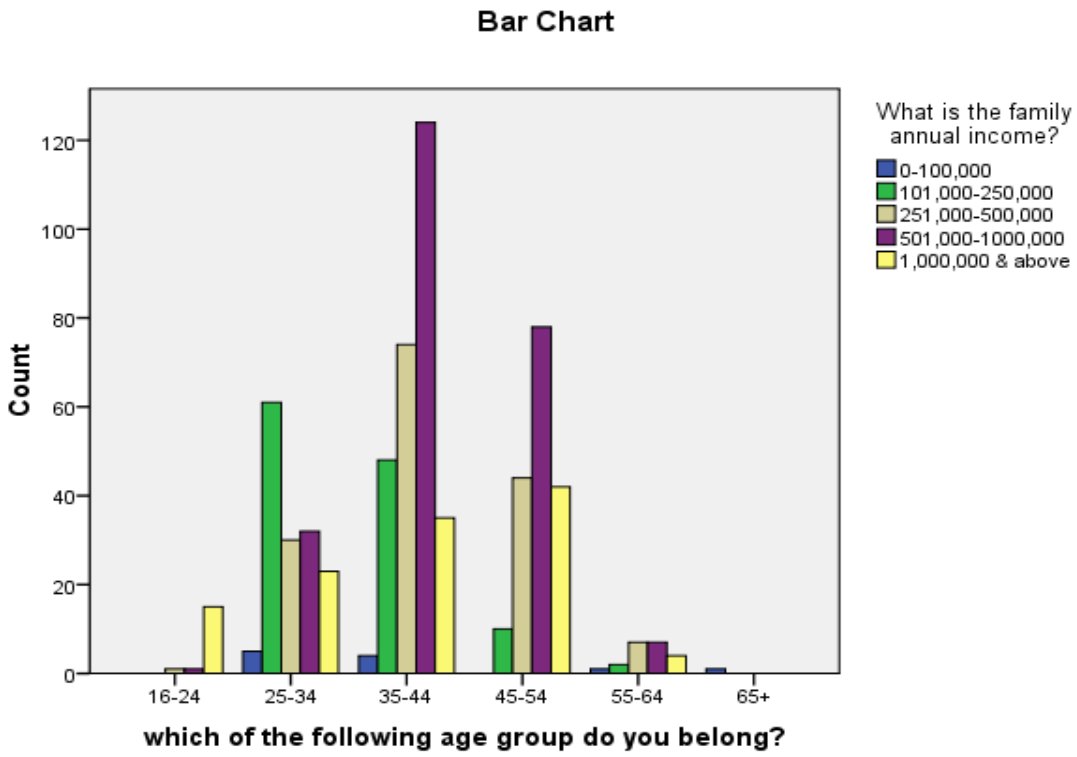

Figure 6.39: Age Group by Annual Family Income.

The *p* value = 0.00< 0.05 among 649 valid cases, which is highly significant rejects the null hypothesis that there is no relationship between age and income, and accepts the alternative hypothesis that age and income are related. Most (37.3%) of the population earn between 501,000-1,000,000, while only 18.3% earn above 1,000,000, the least (1.7%) of the population earn below 100,000.

6.4.1.6 Educational Qualification by Annual Family Income

Frequency table of demography/socio-economic variables in appendix 8b shows that most (64.3%) of the population are educated to the graduate level. as illustrated in figure 6.40. Also, majority of the graduates (37.6%) from cross tabulation of education/income in appendix 9f, shows that post graduate (69.1%) and the others (44.4%) group earn between 501,000-1,000,000, while 19.2% of the graduates, postgraduates (11.3%) and others (22.2%), earn above 1,000,000. Only 0.7% of the graduates and 2.1% of the postgraduates earn below 100.000.

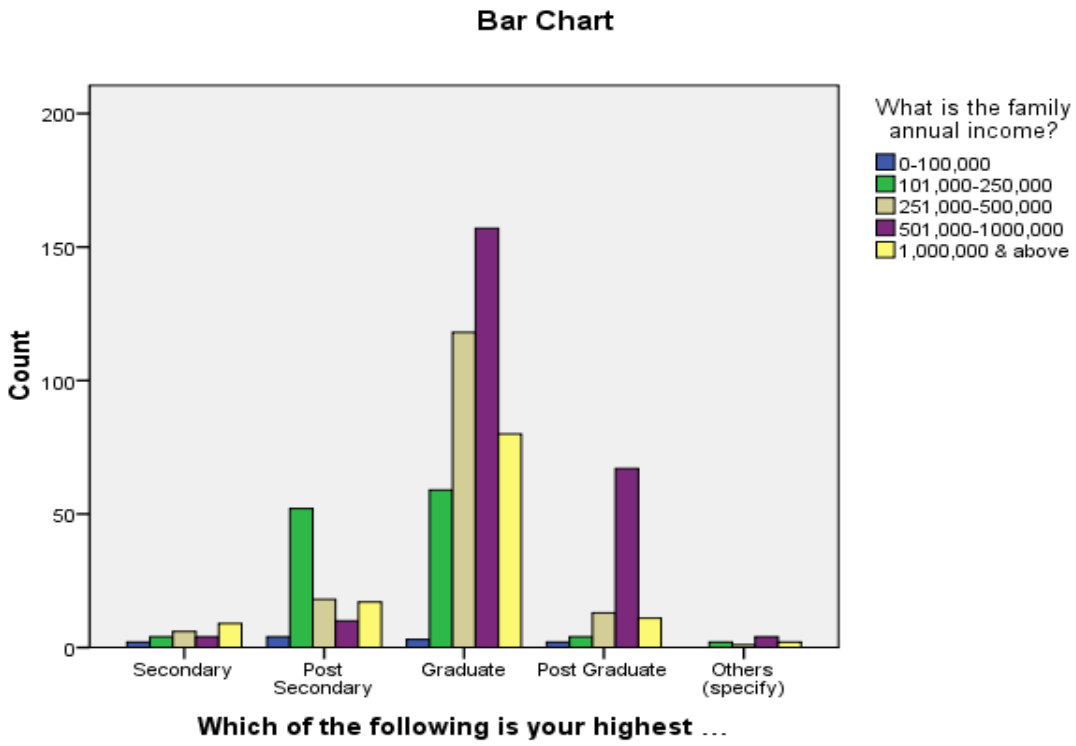

Figure 6.40: Educational Qualifications by Annual Family Income

The Chi-square test of independence result, which is highly significant among 649 valid cases with the *p* =value at 0.00< 0.05, shows that educational qualification is related to annual family income.

In summary, all the demo socio-economic variables used to assess the overall satisfaction have strong significant relationship with each other and satisfaction are determined by family income, which is important to service delivery and bill payment; except household size which has a weak relationship.

6.4.2 Socio-economic versus Overall Satisfaction

The hypothesis of this study as stated in section 3.4, states that *"The low income Utility customers, who live in the high density area of the city and the peri-urban, are not likely to be satisfied with the quality of service provided by public water utilities."* Testing this statistically through cross tabulation, chi-squared test for independence was used to determine whether two or more variables are related, by comparing the frequency of cases found in the various categories of one variable across the different categories of another variable (Gravetter and Wallnau, 2004). For example, are customers who live in high density areas more likely to have a higher level of dissatisfaction than those who live in low and medium density areas of the city? There are ten elements (service areas) in the sample frame that forms the unit of analysis in the survey carried out. Surveys were carried out independently within the service areas of the Federal Capital Territory (FCT), screened and cleaned separately before being merged as a data file, but retaining their service area ID. The service areas are cross tabulated with the overall satisfaction to see the level of satisfaction of customers across service area and to see if they are statistically independent.

6.4.2.1 Service Areas versus Overall Satisfaction:

H_0: There is no relationship between Service Areas and Overall Satisfaction

H_1: There is a relationship between Service Areas and Overall Satisfaction.

The result of the cross tabulation presented in table 6.7, shows that the relationship is highly significant, with a *p*-value = 0.00. Since the P-value is less than or within the range of 0.05, it means that there is a 0.00% chance that H_0 will occur; thus the H_0 is rejected and the alternative (H_1) is accepted. We therefore conclude that there is a strong relationship between overall satisfaction and service areas. The level of satisfaction varies by service areas.

Table 6.7: Service Area by Overall Satisfaction

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	2.130E2	36	.000
Likelihood Ratio	225.509	36	.000
Linear-by-Linear Association	3.885	1	.049
N of Valid Cases	647		

a. 22 cells (44.0%) have expected count less than 5. The minimum expected count is .17.

The bar chart in figure 6.41 shows that there is a weak positive relationship between Asokoro, Gwagwalada, Karu service areas and overall satisfaction. Because these are the service areas where Overall Satisfaction (OS) is very low.

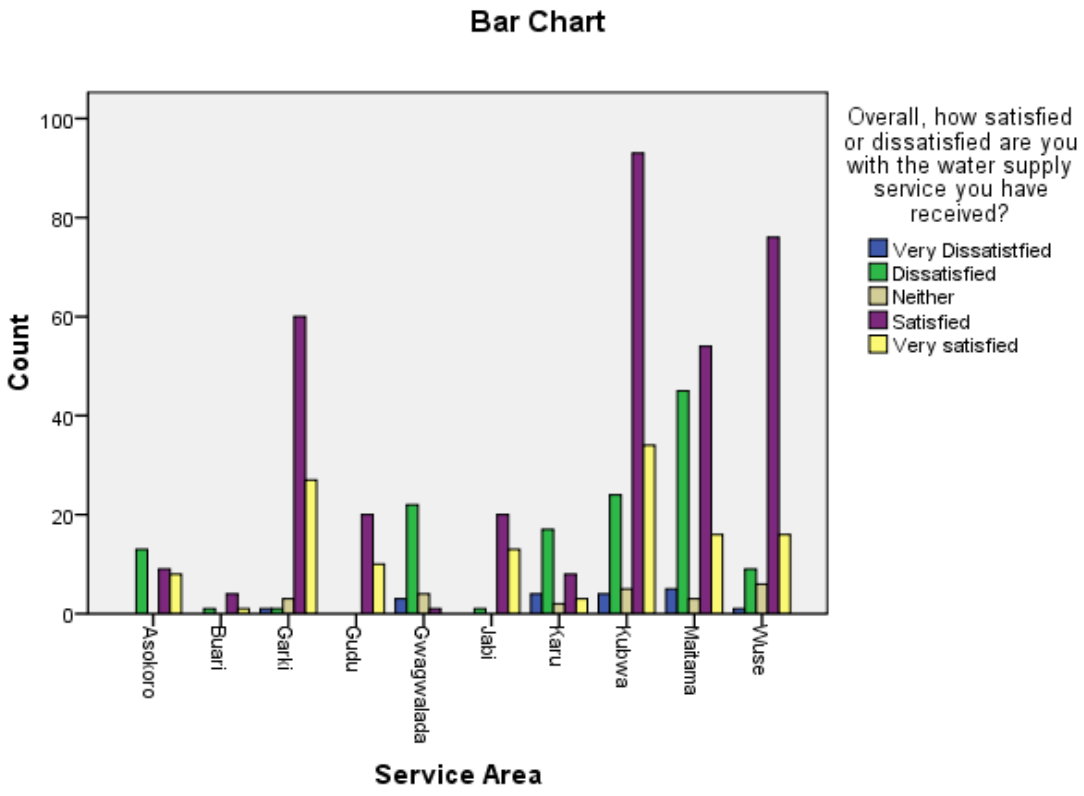

Figure 6.41: Overall Satisfactions by the Service Areas.

6.4.2.2 Classification Area versus Overall Satisfaction:

H_0: There is no relationship between service areas, overall satisfaction and classification areas

H_1: There is a relationship between service areas, overall satisfaction and classification areas.

Significance levels for statistics in table 6.8 are not significant *p*=value of 0.6> 0.05 for low density areas, highly significant *p*=value of 0.00< 0.05 for medium density and

Table 6.8: Chi-Square Test of Classification Area by Overall Satisfaction

Chi-Square Tests

Classification of Area		Value	df	Asymp. Sig. (2-sided)
Low density	Pearson Chi-Square	32.307[a]	15	.006
	Likelihood Ratio	31.468	15	.008
	Linear-by-Linear Association	2.778	1	.096
	N of Valid Cases	28		
Medium density	Pearson Chi-Square	1.696E2	36	.000
	Likelihood Ratio	189.267	36	.000
	Linear-by-Linear Association	.387	1	.534
	N of Valid Cases	518		
High density Area	Pearson Chi-Square	20.927[c]	15	.139
	Likelihood Ratio	17.149	15	.310
	Linear-by-Linear Association	7.852	1	.005
	N of Valid Cases	101		

a. 24 cells (100.0%) have expected count less than 5. The minimum expected count is .07.

b. 24 cells (48.0%) have expected count less than 5. The minimum expected count is .12.

c. 20 cells (83.3%) have expected count less than 5. The minimum expected count is .08.

no significant *p*=value of 0.139> 0.05 for high density areas respectively. This means that there is little or no chance that H_1 will occur in low density areas and high density areas and therefore accept H_0 that there is no relationship. However, at p=value of 0.00% for medium density areas, we reject H_0 and accept H_1 and conclude that there is a relationship between overall satisfaction and the medium density areas with classification areas.

The level of satisfaction varies by service areas and classification areas. Customers in the medium density area have a higher level of satisfaction than those in the low density and high density areas as shown in figure 6.42.

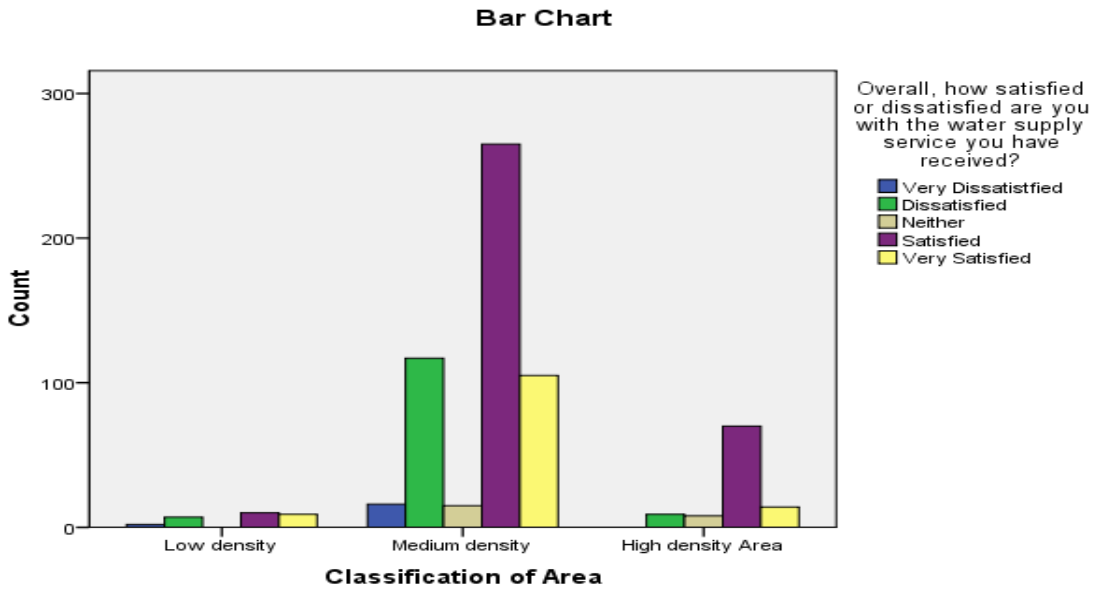

Figure 6.42: Classification Areas Overall Satisfaction.

6.4.2.3 Gender versus Overall Satisfaction

H_0: There is no relationship between service areas, overall satisfaction and gender

H_1: There is a relationship between service areas, overall satisfaction and gender

There is a highly significant level for statistics at 0.00< 0.05 and 0.00, 0.05 for male and female respondents at 357 and 290 number of valid cases respectively.

Table 6.9: Chi-Square Test of Gender by Overall Satisfaction

Chi-Square Tests

What is your gender		Value	df	Asymp. Sig. (2-sided)
Male	Pearson Chi-Square	1.445E2	36	.000
	Likelihood Ratio	158.758	36	.000
	Linear-by-Linear Association	2.438	1	.118
	N of Valid Cases	357		
Female	Pearson Chi-Square	89.243[b]	36	.000
	Likelihood Ratio	91.998	36	.000
	Linear-by-Linear Association	1.530	1	.216
	N of Valid Cases	290		

a. 33 cells (66.0%) have expected count less than 5. The minimum expected count is .08.

b. 33 cells (66.0%) have expected count less than 5. The minimum expected count is .05.

This means that there is a 0.00% chance that H_0 will occur among male gender and 0.00% chance that H_0 will occur among females.

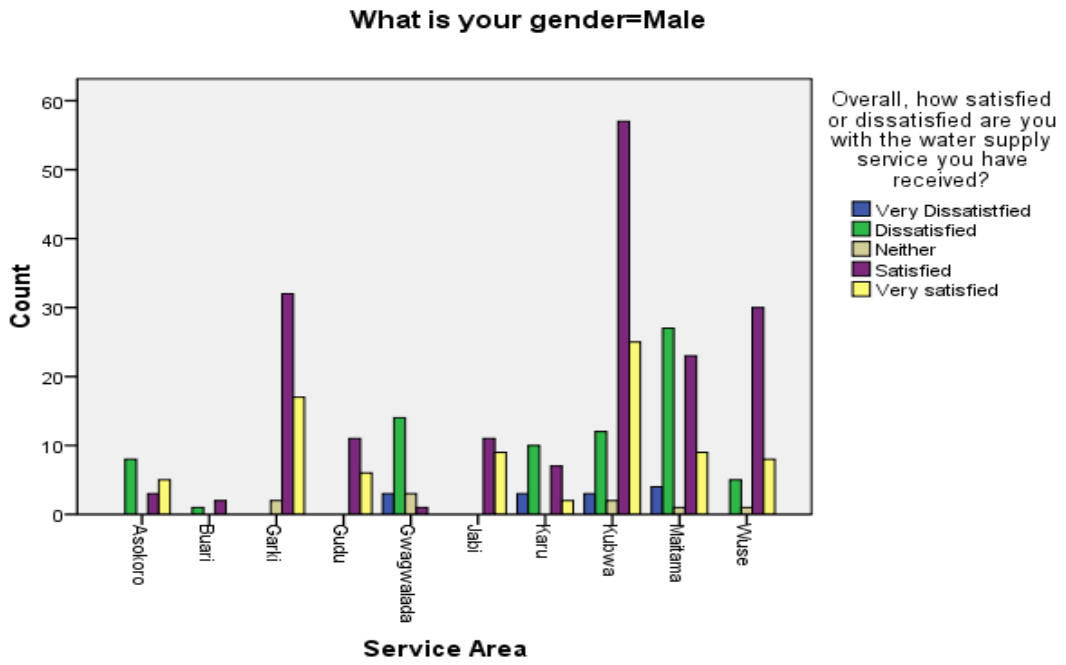

Figure 6.43: Service Area Overall Satisfaction by Male Gender.

We shall reject H_0 and conclude that there is a relationship between overall satisfaction, service areas and gender. The level of satisfaction varies in service areas by gender.

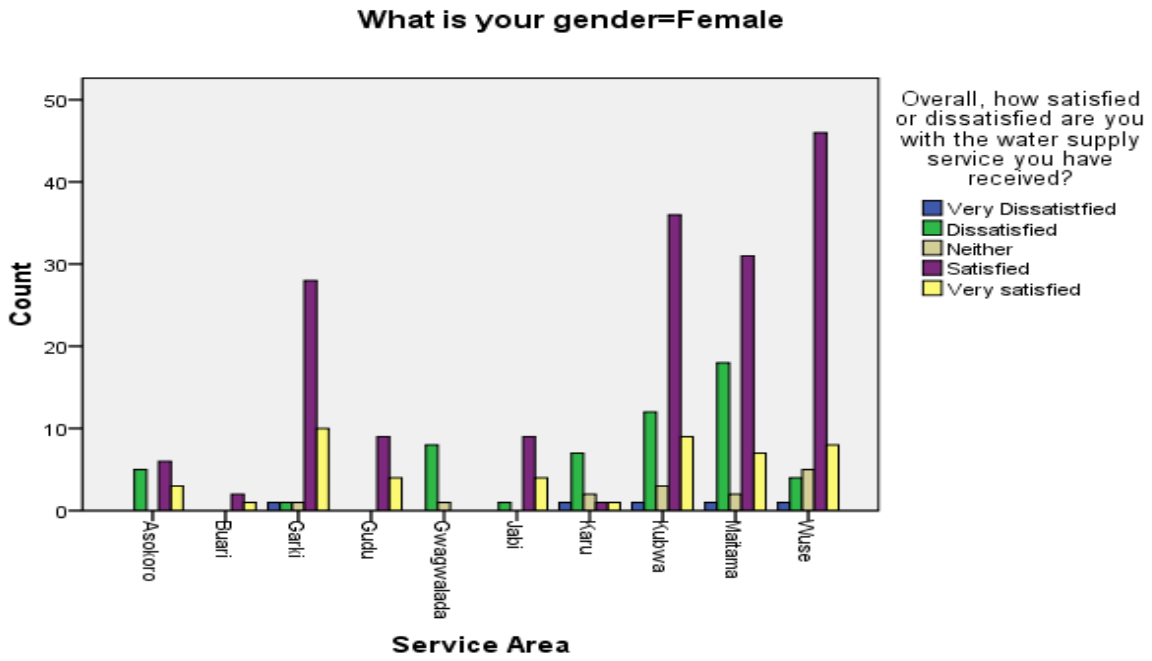

Figure 6.44: Service Area Overall Satisfaction by Female Gender.

6.4.2.4 Age Group versus Overall Satisfaction

H_0: There is no relationship between service areas overall satisfaction and age group

H_1: There is a relationship between service areas overall satisfaction and age group

Among the age groups, age 16-24 recorded significant *p*=value of 0.169> 0.05 for 17 numbers of valid cases, with 14 cells (93.3%) having expected count of less than 5. The expected count is 0.06. Age 25-34 recorded significant *p*=value of 0.002< 0.05 for 151 numbers of valid cases. 30 cells (75%) have expected count less than 5; the minimum expected count is 0.04. Age 35-44 recorded a highly significant *p*=value of 0.000< 0.00 for 285 number of valid cases. 35 cells (70%) have expected count of less than 5; the minimum expected count is 0.13. Age 45-54 also recorded a highly significant *p*=value of 0.000< 0.00 for 173 number of valid cases. 39 cells (78%) have expected count of less than 5; the minimum expected count is 0.03.

Table 6.10: Chi-square test of Service Area Overall Satisfaction by Age Group

Chi-Square Tests				
Which of the following age group do you belong?		Value	df	Asymp. Sig. (2-sided)
16-24	Pearson Chi-Square	11.617[a]	8	.169
	Likelihood Ratio	10.070	8	.260
	Linear-by-Linear Association	1.130	1	.288
	N of Valid Cases	17		
25-34	Pearson Chi-Square	52.644[b]	27	.002
	Likelihood Ratio	55.787	27	.001
	Linear-by-Linear Association	.877	1	.349
	N of Valid Cases	151		
35-44	Pearson Chi-Square	1.142E2	36	.000
	Likelihood Ratio	122.342	36	.000
	Linear-by-Linear Association	8.111	1	.004
	N of Valid Cases	285		
45-54	Pearson Chi-Square	89.710[d]	36	.000
	Likelihood Ratio	92.744	36	.000
	Linear-by-Linear Association	.510	1	.475
	N of Valid Cases	173		
55-64	Pearson Chi-Square	17.852[e]	20	.597
	Likelihood Ratio	18.410	20	.560
	Linear-by-Linear Association	.010	1	.920
	N of Valid Cases	20		
65+	Pearson Chi-Square	.[f]		
	N of Valid Cases	1		
a. 14 cells (93.3%) have expected count less than 5. The minimum expected count is .06.				
b. 30 cells (75.0%) have expected count less than 5. The minimum expected count is .04.				
c. 35 cells (70.0%) have expected count less than 5. The minimum expected count is .13.				
d. 39 cells (78.0%) have expected count less than 5. The minimum expected count is .03.				
e. 30 cells (100.0%) have expected count less than 5. The minimum expected count is .10.				
f. No statistics are computed because Service Area and Overall, how satisfied or dissatisfied				

While age 55-64 recorded a significant *p*=value of 0.597> 0.05 for 20 number of valid cases. 30 cells (100%) have expected count of less than 5, and the minimum expected count is 0.10. No statistics are computed for age 65+ because service area and overall satisfaction are constants; table 6.10 shows the level of satisfaction

among age groups, while the graphs shows satisfaction variation between the service areas age groupings.

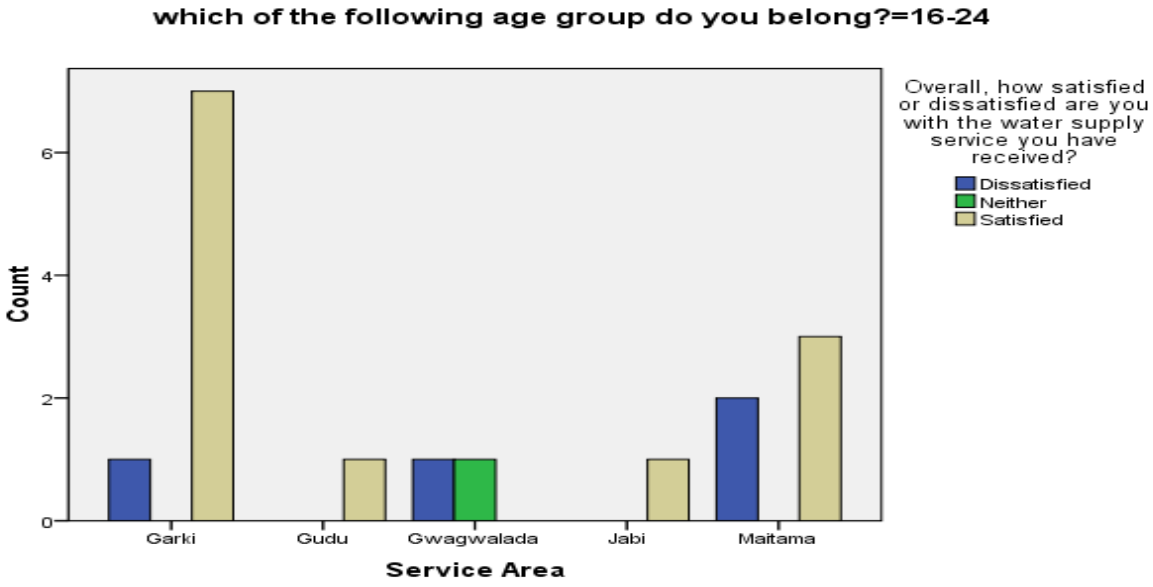

Figure 6.45: Overall Satisfaction with Age group 16-24

Figure 6.45 shows high satisfaction (7 count) against dissatifaction (1 count) in Garki service area in the age 16-24 category, with no dissatisfaction in Gudu and Jabi service areas. Gwagwalada did not record any satisfaction, but (1 count) neither and dissatisfaction each; Maitama recorded almost the same proportion of dissatisfaction (2 count) and satisfaction (3 count) with the later slighly higher.

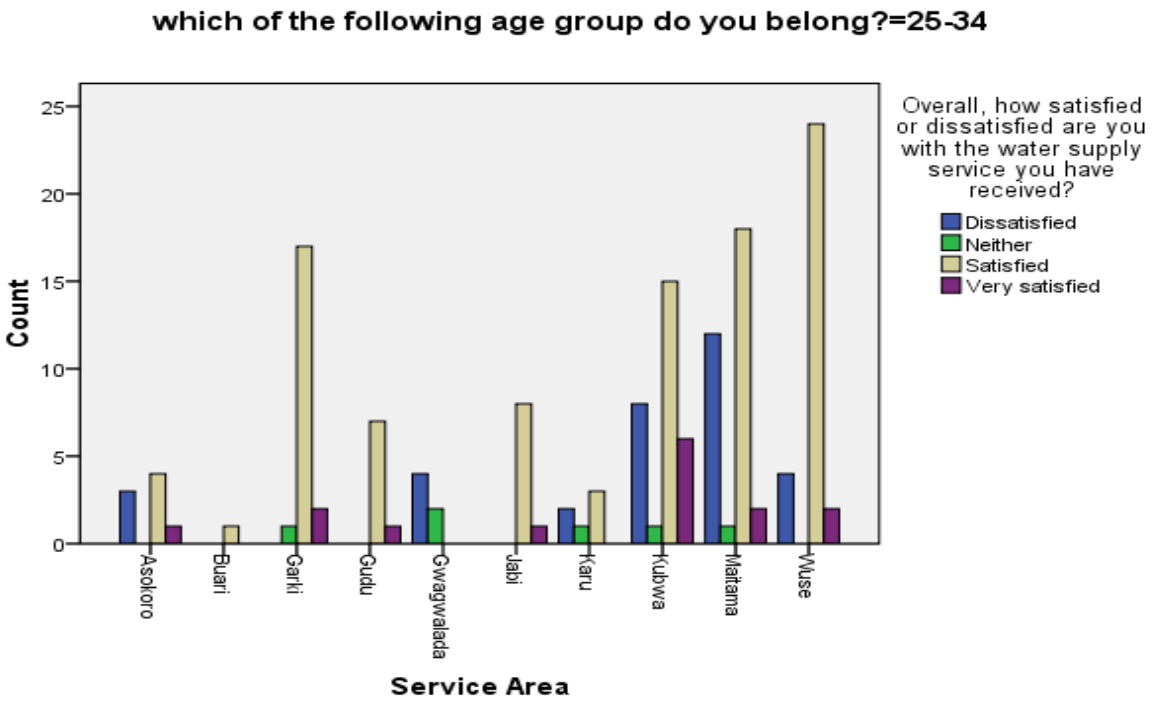

Figure 6.46: Overall Satisfaction by Age Group 25-34

The SPSS output in figure 6.46 shows that satisfaction is higher across all service areas in the 25-34 age group, except the case of Gwagwalada service area which recorded (4 count) dissatisfaction and (2 count) neighther with no satisfaction count (Table 9.J in appendix 9). This agrees with table 6.10 which shows that the relationship significant (with a p=value of 0.02< 0.05), compared to age 16-24.

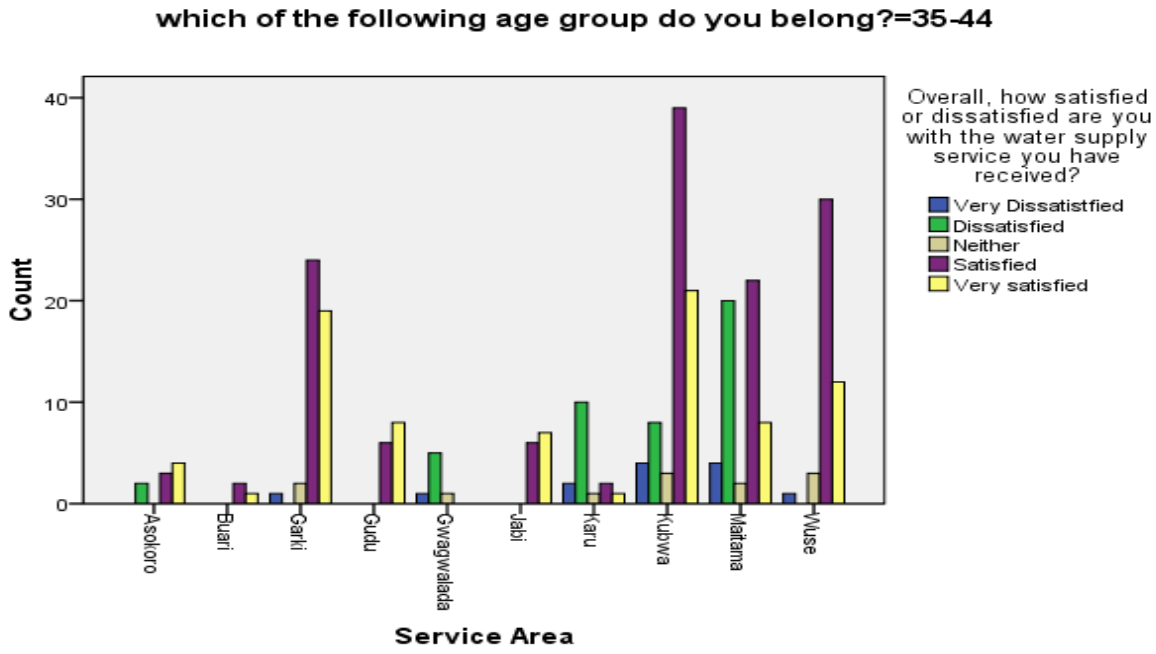

Figure 6.47: Overall Satisfaction by Age Group 35-44

Figure 6.47 shows that very satisfied were recorded in this age group across all service areas, again except Gwagalada and Karu service areas which are high density areas with low income earners. The Assymetric significance has a high *p*=value of 0.00. which is less than 0.05 significant level in table 6.10 Chi-square test of independence. This confirmes the hypothesis that low income earners in high density areas and outskirts of the city, are not likely to be satisfied with the service quality provided by public water utilities in low income countries.

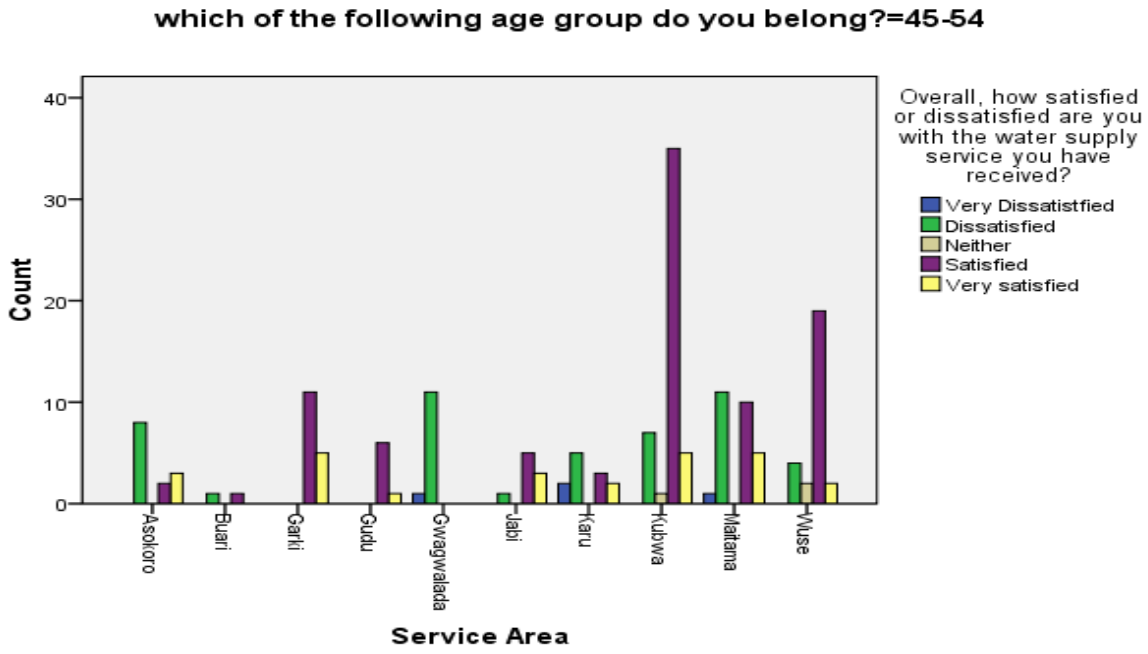

Figure 6.48: Overall Satisfaction by Age Group 45-54

In this category, figure 6.48 shows that dissatisfaction is higher in Gwagwalada and Karu service areas as the case in age group 35-44, but also in Asokoro and Maitama which has a mixture of low and middle income earners occupying block of flats within the Federal Capital Territory (FCT). Although the p=value of 0.00< 0.05 is highly significant in table 6.10, which means the satisfaction is high within the age group.

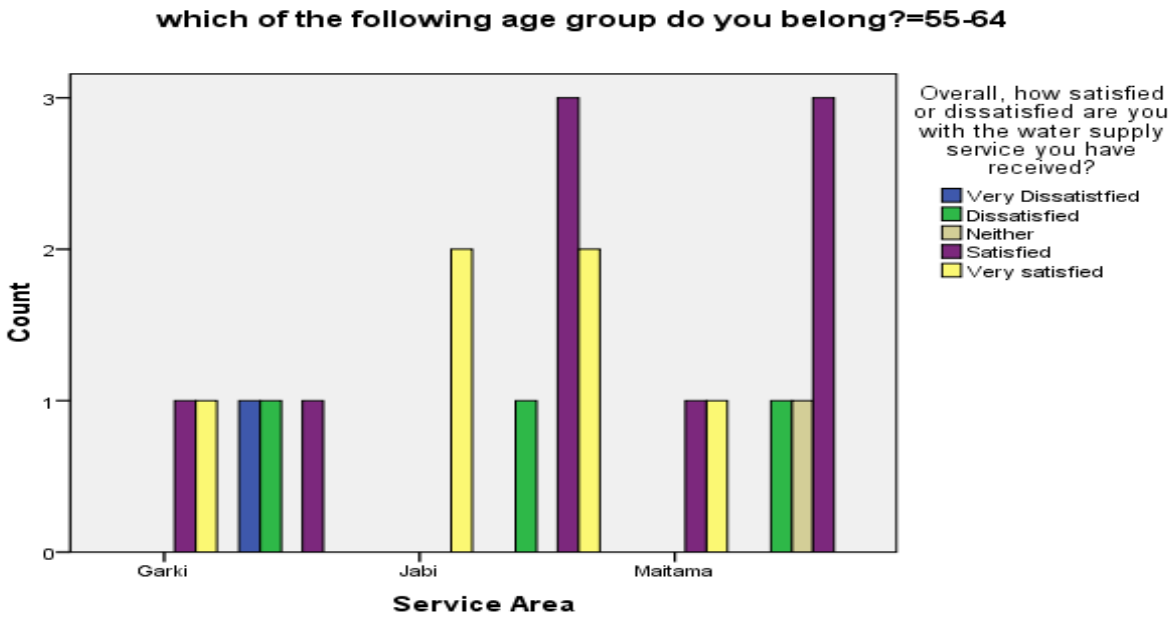

Figure 6.49: Overall Satisfaction by Age Group 55-64

In this age group, satisfaction is high only in Wuse, Jabi and Gudu service areas or satisfaction is at par with dissatisfaction as in Garki, Buari and Maitama service areas in figure 6.49. Karu and Gwagwalada recorded zero count in this age group.

6.5 Correlation of Overall and Satisfaction Variables

While Chi-square statistics is used to determine the association between socio-economic variables and overall satisfaction, correlation analysis is used to describe the strength and direction of the linear relationship between two variables (overall satisfaction and the satisfaction variables); scatter gram illustrates the data and can be used to check if the two variables are related in a linear fashion. There may be some extreme outliners that strongly influence the regression line or there may be a non-linear relationship (Brace et al, 2009). The direction of slope of the line will indicate whether the relationship is positive or negative. If it slopes from downwards from the left to the right, then it is a negative relationship and if it rises from the left to the right, then it is said to be a positive correlation. Scatter gram is one of the easiest ways to tell if two items are related in a linear fashion and to spot the trends is to plot scatter grams or scatter plots.

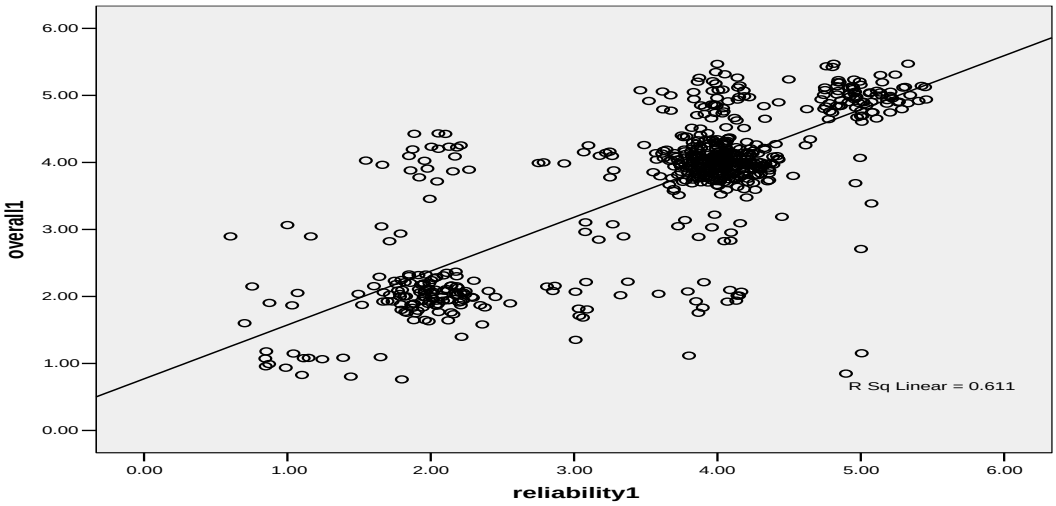

Figure 6.50: Scatter gram of Reliability and overall Satisfaction

At a glance, the relationship between overall satisfaction and reliability of water supply in figure 6.50 looks quite strong. It shows that the data points are reasonably well distributed along the regression line, in a linear relationship with no outliners. There is a positive and strong relationship between overall satisfaction and reliability and it is worth exploring the correlation between both variables (see table 6.11).

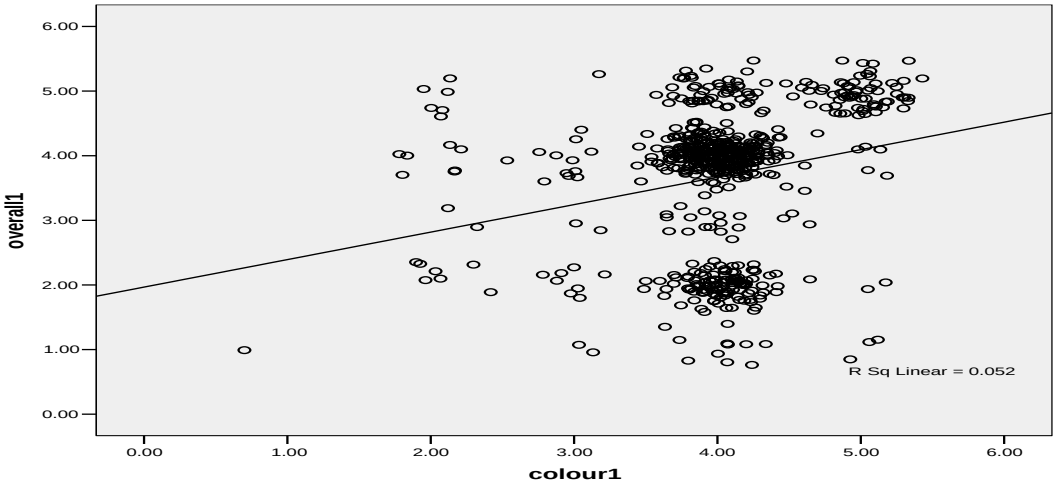

Figure 6.51: Scatter gram of Colour and Overall Satisfaction

The scatter gram of Colour in figure 6:51, shows that a positive relationship exists between overall satisfaction and colour of water supply. The major data points are not reasonably distributed along the regression line, in a linear relationship with no outliners. It shows that there is weak but positive relationship between both variables and might be worth exploring.

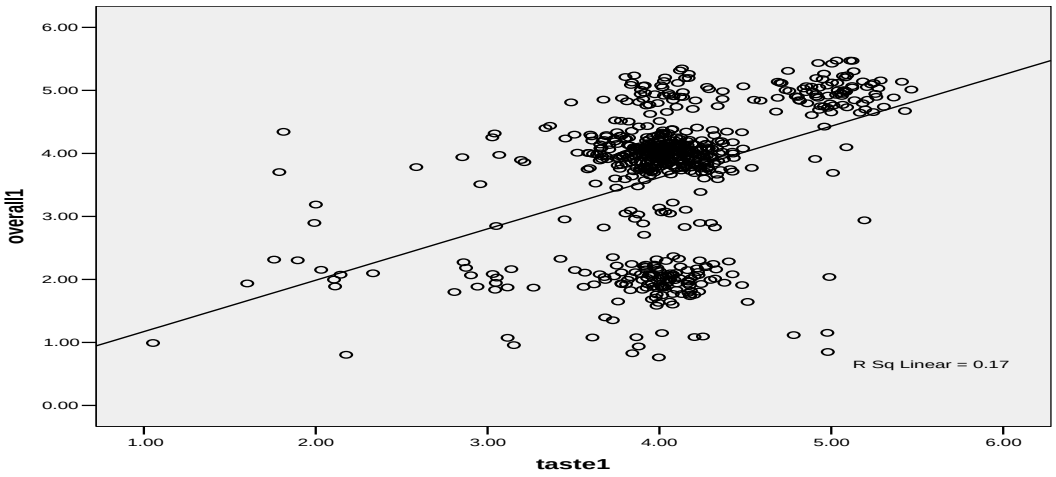

Figure 6.52: Scatter gram of Taste and Overall Satisfaction

The scatter gram for Taste in figure 6:52, shows that the major data are reasonably distributed along the regression line, in a positive linear relationship.

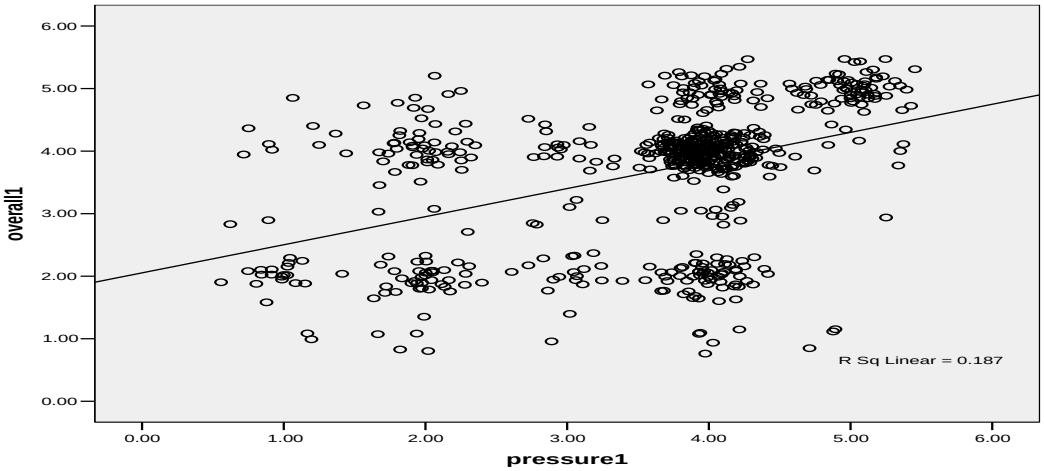

Figure 6.53: Scatter gram of Pressure and Overall Satisfaction

The scatter gram for Pressure in figure 6:53, shows, that the data are reasonably distributed along the regression line, in a positive linear relationship.

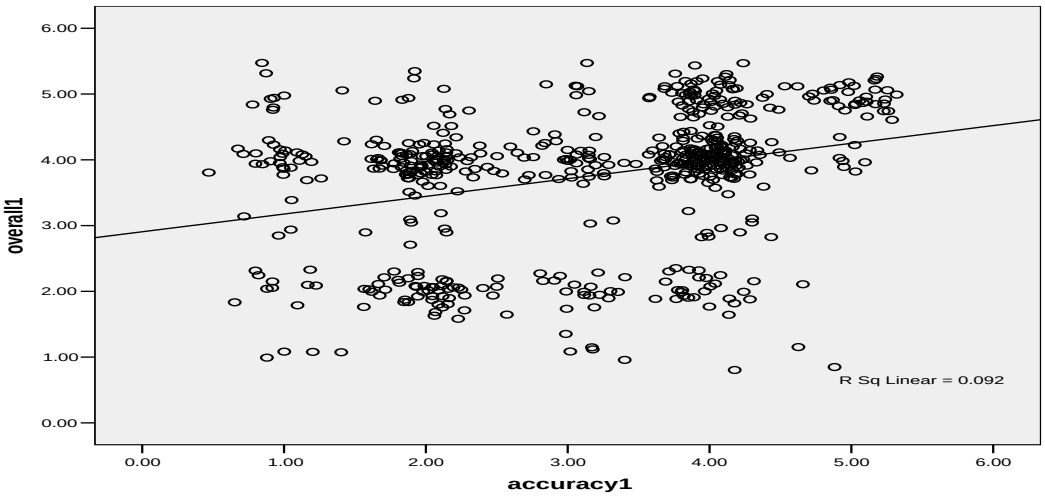

Figure 6.54: Scatter gram of Accuracy of Billing and Overall Satisfaction

The scatter gram for Accuracy in figure 6:54, shows that the data are reasonably distributed along the regression line, in a positive linear relationship.

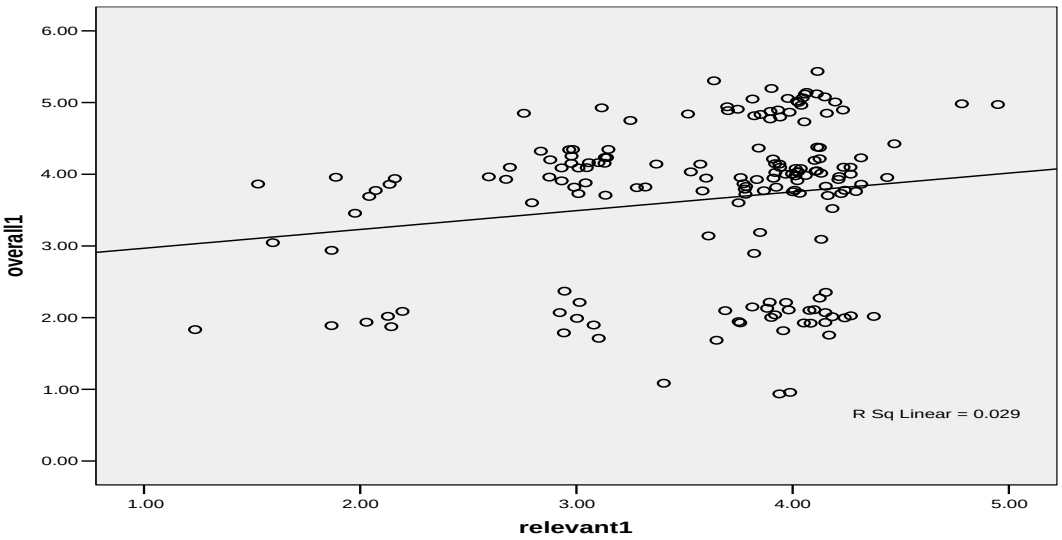

Figure 6.55: Scatter gram of Relevant Knowledge and Overall Satisfaction

The scatter gram of relevant Knowledge of staff in figure 6:55, shows that a positive relationship exists between overall satisfaction and relevant knowledge of staff. The data points are not reasonably distributed along the regression line, in a linear relationship.

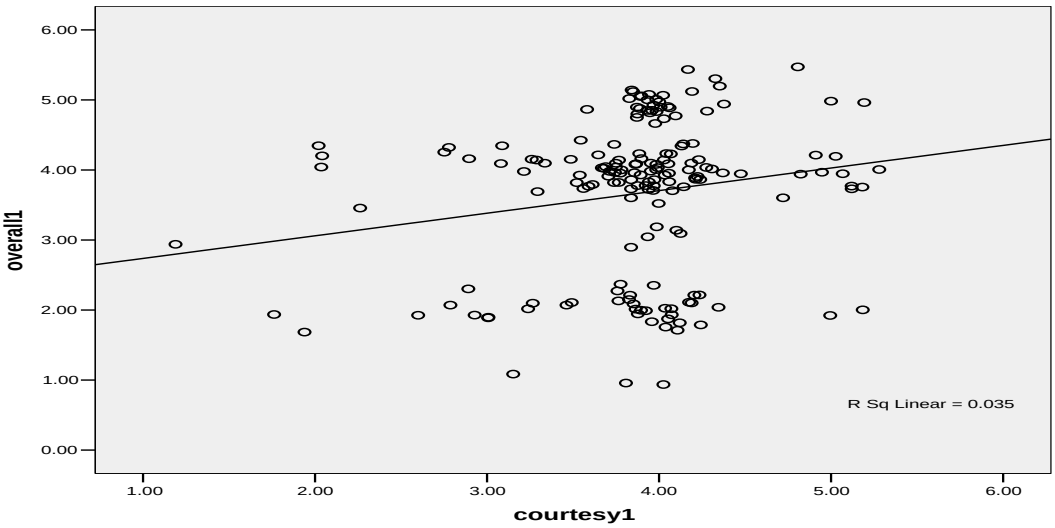

Figure 6.56: Scatter gram of Courtesy of Staff and Overall Satisfaction

The scatter gram of Courtesy of staff in figure 6:56, shows that a positive relationship exists between overall satisfaction and courtesy of staff. The data points are not reasonably distributed along the regression line, in a linear relationship.

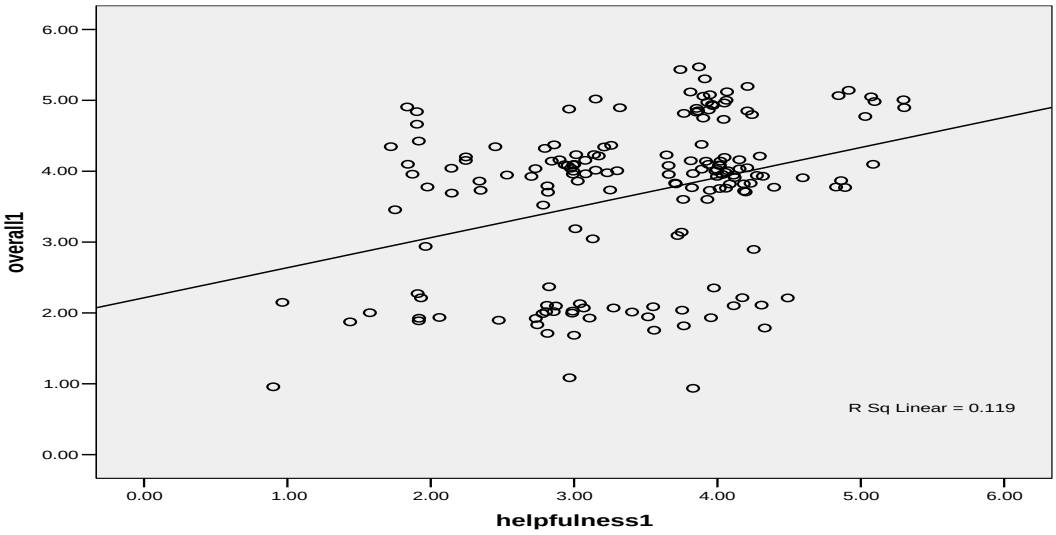

Figure 6.57: Scatter gram of Helpfulness of Staff and Overall Satisfaction

The scatter gram for Helpfulness in figure 6:57, shows that the data are reasonably distributed along the regression line, in a positive linear relationship. The Correlation Coefficient seeks to establish the strength and direction of the relationship between two variables. The Pearson *r* value measures the level of association or strength of relationship between variables. The Square Linear value that appears in the scatter gram is not the correlation coefficient, but the Pearson's *r*. In accordance with Pallant, (2007) as a rule of thumb, if coefficient *r* value is between:

i) -1.0 to -0.7 = Strong Negative Association

ii) -0.6 to -0.3 = Moderate Negative Association

iii) -0.3 to 0.3 = Week Negative or Association

iv) 0.3 to 0.6 = Moderate Positive Association

v) 0.7 to 1.0 = Strong Positive Association

Table 6.11: Correlation between Overall and Satisfaction Attributes

Satisfaction Variables	(N)	Correlation Coefficient (r)	Sig. (2-tailed)	Interpretation
Reliability	617	0.817	0.000	Strong positive relationship
Colour	615	0.258	0.000	Weak positive relationship
Pressure	614	0.434	0.000	Moderate positive relationship
Taste and Smell	613	0.45	0.000	Moderate positive relationship
Accuracy of Billing	562	0.304	0.000	Moderate positive relationship
Relevant Knowledge	163	0.205	0.009	Weak positive relationship
Courtesy	168	0.216	0.005	Weak positive relationship
Helpfulness	164	0.359	0.000	Moderate positive relationship

According to Pallant (2007), if the data are not parametric or if the relationship is not linear, then a non-parametric test of correlation such as Spearman's *r* should be used. The strength of the correlation is indicated by the value of the correlation coefficient, which varies between 1 and 0.

Reliability:-

The proportion of variation (r^2) in overall satisfaction can be attributed to reliability, which is equals to sixty-seven percent (67%). In comparison with table 6.11, there is a strong positive correlation between overall satisfaction and reliability (r_s = *0.817, N = 617, p< 0.005, two-tailed and* r^2 = *0.667*). In conclusion, reliability could be used to predict overall satisfaction.

Colour:-

We can say that only seven percent (7%) of variation in overall satisfaction is attributed to colour and physical appearance of water supply. In comparison to the correlation table in 6.11, there is a weak positive correlation (r_s *= 0.258, N = 615, p< 0.005, two-tailed and* r^2 *= 0.067*). Colour cannot be used to predict overall satisfaction.

Taste:-

It suggests that twenty percent (20%) variance in overall satisfaction can be attributed to taste. In comparison to the correlation table in 6.11, there is a moderate positive correlation (r_s *= 0.450, N = 613, p< 0.005, two-tailed and* r^2 *= 0.203*). Taste can be used to predict overall satisfaction.

Pressure:-

It suggests that nineteen percent (19%) variance in overall satisfaction can be attributed to pressure of water supply. In comparison to the correlation table in 6.11, there is a moderate positive correlation (r_s *= 0.434, N = 614, p< 0.005, two-tailed and* r^2 *= 0.188*). Pressure can be used to predict overall satisfaction.

Accuracy:-

It suggests that nine percent (9%) variance in overall satisfaction can be attributed to accuracy of water supply. In comparison to the correlation table in 6.11, there is a moderate positive correlation (r_s *= 0.304, N = 562, p< 0.005, two-tailed and* r^2 *= 0.092*). Pressure can be used as an indicator to predict overall satisfaction.

Relevant knowledge:-

We can say that only four percent (4%) of variation in overall satisfaction is attributed to relevant knowledge of staff. In comparison to the correlation table in 6.11, there is a weak positive correlation (r_s *= 0.205, N = 163, p> 0.005, two-tailed and* r^2 *= 0.042*). Relevant knowledge of staff cannot be used as an indicator to predict overall satisfaction.

Courtesy:-

We can say that only five percent (5%) of variation in overall satisfaction is attributed to courtesy of staff. In comparison to the correlation table in 6.11, there is a weak positive correlation (r_s *= 0.216, N = 168, p< 0.005, two-tailed and* r^2 *= 0.047*). The courtesy of staff cannot be used as an indicator to predict overall satisfaction.

Helpfulness:-

It suggests that thirteen percent (13%) variance in overall satisfaction can be attributed to helpfulness of staff. In comparison to the correlation table in 6.11, there is a moderate positive correlation (r_s *= 0.359, N = 164, p< 0.005, two-tailed and* r^2 *= 0.129*). Helpfulness of staff can be used as an indicator to predict overall satisfaction.

While reliability remains the strongest satisfaction variable that can predict variations in overall satisfaction; pressure, taste and smell, accuracy of billing and helpfulness of staff remain moderate predictors of overall. Colour, relevant knowledge and courtesy of staff however, have weak relationship with overall satisfaction with little variance in change of overall satisfaction, and so are bad predictors.

6.6 Regression Analysis

6.6.1 Multiple Regression

While correlation analysis is used to test the strength and direction of satisfaction attributes in the previous section, regression analysis is used to address a variety of research questions, it tells how well a set of subscales on customer satisfaction survey is able to predict the overall satisfaction. The research question was *"what satisfaction indicator can best predict the overall satisfaction and be used to monitor the service quality of public water utilities over a period of time?"* A model is developed through a regression equation to predict the change in overall satisfaction for any positive or negative unit change that occurs in the predictive satisfaction variable, such as reliability, colour, pressure, taste, accuracy of water supply and relevant knowledge, courtesy and helpfulness of employees to public water utility customers. The major types of regression analysis techniques that can be used depending on the nature of question to be addressed are: standard (listwise), hierarchical (sequential) and stepwise (statistical) methods of regression analysis (Pallant, 2007; Brace et al, 2009). List wise regression techniques otherwise known as Standard regression technique, has been adopted and used in this study because of its simplicity and can be triangulated with Stepwise technique.

6.6.1.1 Standard (List wise) Multiple Regression

In SPSS package 16, this method is known as Enter. The set of predictor variables is specified into the model by the researcher and each predictor is assessed on what variance it explains, that is additional to the variance explained by all the other predictors combined. This is probably the most commonly used and safest method (Pallant, 2007; Brace et al, 2009). The output from SPSS 17 regression output in table 6.12 shows that reliability is the best predictor among the satisfaction variable as suggested in the interpretation column.

6.6.1.2 Hierarchical Multiple Regression:

In this method, the researcher has to enter the predictor variables in a particular order determined by theoretical considerations of findings. If the predictor variables do not significantly increase the predictive power of the model, then the variable is dropped (Brace et al, 2009). This method should not be used if in doubt that one variable is likely to be more important than another (Pallant, 2007; Brace et al, 2009).

6.6.1.3 Stepwise Multiple Regression:

Each variable is entered in sequence in this method and its value assessed to see the variables contributing the most to the model. All the variables contributing significantly to the model are retained, while those not contributing significantly are removed. The order in which the predictor variables are entered into the model or taken out is determined according to the strength of their correlation with the criterion variable and not according to any theoretical rationale (Tabachnick and Fidel, 2006). This regression technique has been used to triangulate with the standard regression technique used above.

Table 6.12: LISTWISE Regression Model Summary of Satisfaction Attributes

Satisfaction Variables	(N)	Coefficient (r)	R Square (R^2)	*Adjusted* R Square (R^2)	Interpretation
Reliability	617	0.817	0.667	0.667	It suggests that the proportion of variation (r^2) in overall satisfaction can be attributed to reliability, which is equals to sixty-seven percent (67%).
Colour	615	0.258	0.067	0.067	It suggests that only seven percent (7%) of variation in overall satisfaction is attributed to colour and physical appearance of water supply.
Pressure	614	0.434	0.188	0.188	It suggests that nineteen percent (19%) variance in overall satisfaction can be attributed to pressure of water supply.
Taste and Smell	613	0.45	0.203	0.203	It suggests that twenty percent (20%) variance in overall satisfaction can be attributed to taste.
Accuracy of Billing	562	0.304	0.092	0.092	It suggests that nine percent (9%) variance in overall satisfaction can be attributed to accuracy of water supply.
Relevant Knowledge	163	0.205	0.042	0.042	It suggests that only four percent (4%) of variation in overall satisfaction is attributed to relevant knowledge of staff.
Courtesy	168	0.216	0.047	0.047	It suggests that thirteen percent (13%) variance in overall satisfaction can be attributed to helpfulness of staff.
Helpfulness	164	0.359	0.129	0.129	It suggests that thirteen percent (13%) variance in overall satisfaction can be attributed to helpfulness of staff.

6.6.2 Regression Model Equation

A regression equation is a mathematical equation that allows us to predict values of one dependent variable from known values of one or more independent variables. In

the model summary table below, the interest is on the R Square, which is known as Coefficient of determination.

Table 6.13: Regression Model Summary

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.704[a]	.496	.493	.784
2	.735[b]	.541	.534	.751
3	.751[c]	.564	.555	.735

a. Predictors: (Constant), reliability1

b. Predictors: (Constant), reliability1, accuracy1

c. Predictors: (Constant), reliability1, accuracy1, taste1

If the coefficient of determination for reliability; accuracy and taste variable as model 1, 2 and 3 in the 'model column' of table 6.13 is multiplied by 100 to convert to percentage, it means that; Model 1(reliability accounts for 49.6% of the overall satisfaction), while model 2 (billing accuracy) and model 3 (taste) accounts for 54.1% and 56.4% of overall satisfaction respectively.

6.6.3 Anova

Anova has been used in validating results from the statistical regression method. The anova table 6.14 below explains the regression model. It validates the model by trying to justify whether the model is reliable or not. If the F ratio in the F column is significant, then the model is reliable. In this case, the regression value under the sig. column is .000 for 1, 2 and 3, which is highly significant.

Table 6.14: Anova Table of Regression

ANOVA[d]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	92.103	1	92.103	149.777	.000[a]
	Residual	93.470	152	.615		
	Total	185.574	153			
2	Regression	100.310	2	50.155	88.823	.000[b]
	Residual	85.264	151	.565		
	Total	185.574	153			
3	Regression	104.621	3	34.874	64.618	.000[c]
	Residual	80.953	150	.540		
	Total	185.574	153			

a. Predictors: (Constant), reliability1

b. Predictors: (Constant), reliability1, accuracy1

c. Predictors: (Constant), reliability1, accuracy1, taste1

d. Dependent Variable: overall1

6.6.4 Coefficients

Coefficient is used to derive a regression equation

$\mathbf{Y_i = \beta_0 + \beta_1 X_1 + \beta_2 X_2 \ldots\ldots\ldots + \beta_n X_n}$.

Where;

$\mathbf{Y_i}$ = Dependent variable (Overall satisfaction)

$\mathbf{X_1}$ = Independent variable (Reliability, accuracy etc.)

$\mathbf{e_i}$ = Error term

$\boldsymbol{\beta_0}$ = Autonomous value (Level of satisfaction that is not a function of reliability)

$\boldsymbol{\beta_1}$ = Marginal value (Rate of change in respect of reliability)

$\boldsymbol{\beta_0}$, $\boldsymbol{\beta_1}$, $\boldsymbol{\beta 2}$, and $\boldsymbol{\beta_n}$ are unknown regression coefficients (constants), which are to be estimated. $\boldsymbol{\beta_0}$ is the intercept while $\boldsymbol{\beta_1}$, $\boldsymbol{\beta 2}$, $\boldsymbol{\ldots\ \beta_n}$ are the slope (gradient) of the line.

The table below shows the regression coefficients of three different models. This model was derived using step wise regression method, a method that removes less important variables at various level of iteration (Brace et al, 2009). The three satisfaction variables that contributed significantly to changes in the overall satisfaction and retained are reliability, accuracy and taste, the contributions of other satisfaction variables are negligible and deleted.

Table 6.15: Regression Coefficient

Coefficients[a]						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.577	.156		3.692	.000
	reliability1	.722	.059	.704	12.238	.000
2	(Constant)	.118	.192		.617	.538
	reliability1	.667	.058	.651	11.441	.000
	accuracy1	.200	.052	.217	3.812	.000
3	(Constant)	-.405	.264		-1.535	.127
	reliability1	.624	.059	.609	10.571	.000
	accuracy1	.202	.051	.220	3.952	.000
	taste1	.304	.107	.158	2.826	.005

a. Dependent Variable: overall1

The coefficient table 6.15 shows the regression coefficients of three different models derived using step wise method of regression analysis.

6.6.4.1 Model1

From the coefficient table 6.15 above, in model 1 of the regression analysis, reliability is the most important contributory variable that determines overall satisfaction. The regression equation is shown as;

$Y_i = 0.577 + 0.722\ X_1 + e_i$.....equation (i)

Where

$\mathbf{Y_i}$ = Overall satisfaction

$\mathbf{X_1}$ = Reliability

$\boldsymbol{\beta_0}$ = 0.577

$\boldsymbol{\beta_1}$ = 0.722

$\boldsymbol{\beta_0}$ which is 0.577, is the intercept of the above regression equation, reflects the level of overall satisfaction derived from water supplied if the reliability attribute is zero.

β_1 which is 0.722, is the slope of regression equation. It measures the rate of change of the overall satisfaction with respect to the in reliability attribute. Thus for every one unit change in reliability, overall satisfaction will change by 0.722 unit.

6.6.4.2 Model 2

In model 2 of the regression analysis, two variables (reliability and accuracy) are the major contributors to the overall satisfaction. The regression equation is shown as;

$$\mathbf{Y_i = 0.118 + 0.667X_1 + 0.200X_2 + e_i} \text{ .....equation (ii)}$$

β_0 which is 0.118 is the intercept of the regression equation above. It reflects the level of overall satisfaction derived from water supplied if reliability and accuracy attribute of water is zero.

Based on the coefficients of the predictor (Independent) variables, it can be said that a strong positive relationship exists between overall satisfaction and reliability, while a weak relationship exists between overall satisfaction and accuracy of billing. Thus empirical, overall satisfaction increases by 0.667 unit for every unit change in reliability of water supplied, while overall satisfaction increases by 0.200 units for every increase in accuracy of billing.

6.6.4.3 Model 3

Model 3 analysis three predictor variables namely, reliability, accuracy of billing and taste of water supply. They are the major contributors to overall satisfaction. The regression equation will be:

$$\mathbf{Y_i = - 0.405 + 0.624X_1 + 0.202X_2 + 0.304X_3 + e_i} \text{.....equation (iii)}$$

β_0 which is -0.405 is the intercept of the regression equation above, it reflects the level of overall satisfaction derived from the water supplied if the reliability, accuracy of billing and taste attribute are zero. And, the slope of the model with values 0.624, 0.202 and 0.304 respectively for reliability, accuracy of billing and taste variables.

The values suggest strong positive relationship between reliability and overall satisfaction, weak positive relationship between accuracy of billing and overall satisfaction and weak positive relationship between taste and overall satisfaction. It could there be said that for every unit change in reliability, there is a corresponding 0.624 unit change in overall satisfaction. Similarly, for every unit change in accuracy of billing, there is a 0.202 unit increase in overall satisfaction and for a unit change in

taste, there is 0.304 unit change in overall satisfaction. While correlation analysis was used to describe the strength and direction of the linear relationship between the satisfaction variables to be able to predict the overall satisfaction in section 6.5, regression analysis is used to determine the best predictor of satisfaction variables for monitoring the service quality over a period of time. Table 6.12 regression model summary shows that reliability, which accounts for substantial (67%) variation in overall satisfaction and the best predictor variable.

6.7 Gap Analysis

The gap model of service quality is the difference between customers' important requirements (needs and priorities) expected in service, and customer satisfaction experience (perception of service) would be (Gap= Expectation-Perception). The model provides a conceptual framework for academic and business researchers to study the service quality in marketing (Parasuraman et al, 1988). Detailed discussion on the GAP model is presented in section 2.5.3. This technique is used to answer the research question *"What are the service quality gaps between what the customers expect and what they get and, what are the priorities for improvement?"* The data which was earlier collapsed to verbal scale to allow for descriptive analysis through coding is then transformed back from verbal to numeric scale for further analysis as in shown in table 6.16.

Table 6.16: Transforming the Data Scales

Verbal Scale	*Very Dissatisfied*		*Dissatisfied*		*Neither*		*Satisfied*		*Very Satisfied*	
	1		2		3		4		5	
Numeric	1	2	3	4	5	6	7	8	9	10

The service quality attributes which were elicited during customer focus group discussion in the exploratory (first) phase (see appendix 4f), was used for assessing the customer's expectation (needs and priorities) and perception (satisfaction experience) of sample includes the followings:

- Reliability: Continuity of water supply all days of the week.
- Pressure: Adequate water pressure.

- o Taste and smell: Micro-biological quality of water supply.
- o Billing: Accuracy and interval of billing.
- o Colour: (Chemical quality) Physical appearance supply.
- o Knowledge: Trust and ability to solve complaints on time.
- o Courtesy: Professional conduct of staff.
- o Helpfulness: Interest shown as valued customers

6.7.1 Important Requirements Mean and Ranking for FCT

In answering the first part of the research question, "*What is the gap between what the customers expect and what they get?* The mean score of important customer requirement (expectation) and satisfaction (perception) has to be determined. The mean score for FCT is presented below in table 6.17.

Table 6.17: FCT Important Requirement Mean

Customer Requirements	***Importance Mean***	***Rank***
Colour	9.98	1st
Taste/Smell	9.98	1st
Reliability	9.87	3rd
Pressure	9.82	4th
Billing	9.46	5th
Courtesy	9.07	6th
Helpfulness	9.07	6th
Knowledge	9.07	6th

The overall important requirement mean for the Federal Capital Territory in table 6.17 above, classifies the customers' requirements, the important mean and their ranking. It shows that colour and taste which tie at first position, are very important to FCT Water Board customers among the requirements (satisfaction attributes), while reliability and pressure are important and less important in third and fourth rank respectively, with courtesy, helpfulness and knowledge tying as the least important of the customer requirements. Figure 6.58 below is used to illustrate graphically, the difference between the requirements. After determining the important mean score for

FCT, the importance mean score for the ten service areas in the FCT is also determined in section 6.7.2.

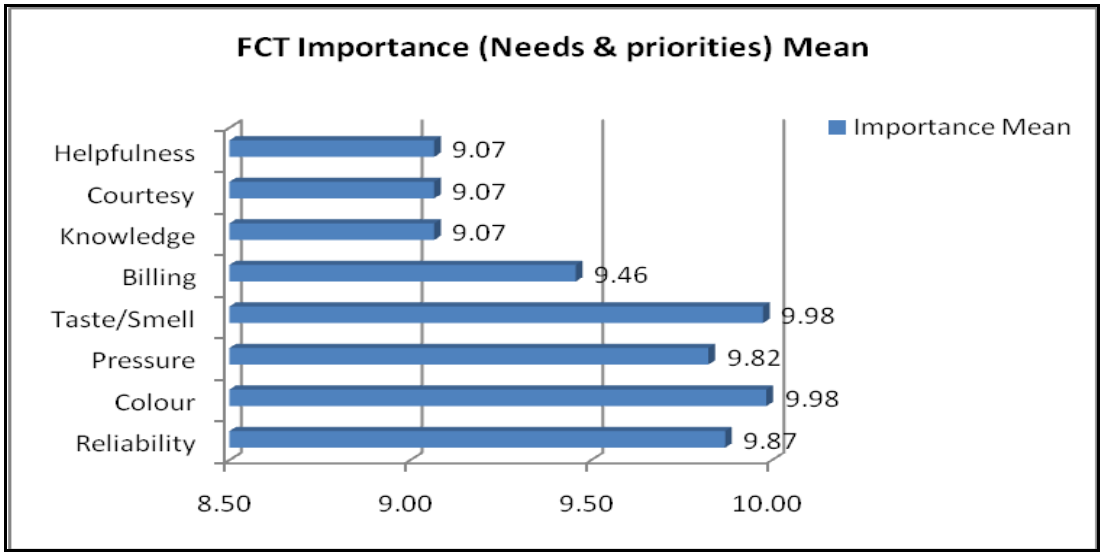

Figure 6.58: FCT Importance (Needs and priorities) Mean

6.7.2 Service Areas Importance Mean Score and Ranking

Table 6.18: Service Areas Important Requirement Mean Score

Service Area Importance Requirement Mean

Service Area	Reliability	Pressure	Taste	Billing	Colour	Knowledge	Courtesy	Helpfulness	Total
Asokoro	9.93	9.80	9.93	10.00	9.67	8.87	8.87	8.87	75.93
Buari	10.00	10.00	10.00	10.00	10.00	9.67	9.67	9.67	79.00
Garki	10.00	10.00	9.98	10.00	9.96	9.74	9.74	9.74	79.15
Gudu	9.93	9.93	9.80	9.80	9.93	8.87	8.87	8.87	76.00
Gwagwalada	9.60	10.00	9.80	9.93	9.27	7.80	7.80	7.80	72.00
Jabi	10.00	10.00	9.94	10.00	9.88	9.71	9.71	9.71	78.94
Karu	10.00	10.00	10.00	10.00	10.00	7.94	7.94	7.94	73.82
Kubwa	9.63	10.00	9.63	10.00	8.57	9.54	9.54	9.54	76.46
Maitama	10.00	9.98	9.95	9.98	9.84	8.91	8.91	8.91	76.49
Wuse	10.00	10.00	9.85	10.00	9.69	8.54	8.54	8.54	75.15

Table 6.18 shows important requirements mean scores of the ten service areas, while table 6.19 shows the ranking of the requirements by the service areas. Knowledge, courtesy and helpfulness which tie at the sixth position in ranking among the service areas except Kubwa, are the least important of the satisfaction requirements. It shows that important requirements of customers are different across the service areas and this should be identified to know their needs.

Table 6.19: Service Areas Important Requirement Mean Ranking

Service Area Important Requirement Ranking								
Service Area	Reliability	Pressure	Taste	Billing	Colour	Knowledge	Courtesy	Helpfulness
Asokoro	2	2	1	5	4	6	6	6
Buari	1	1	1	1	1	6	6	6
Garki	1	4	1	5	1	6	6	6
Gudu	1	4	4	1	1	6	6	6
Gwagwalada	4	3	2	5	1	6	6	6
Jabi	1	4	1	5	1	6	6	6
Karu	1	1	1	1	1	6	6	6
Kubwa	3	3	1	8	1	5	5	5
Maitama	1	4	2	5	2	6	6	6
Wuse	1	4	1	5	1	6	6	6
Total Rank	16	30	15	41	14	59	59	59
Variable Rank	**3rd**	**4th**	**2nd**	**5th**	**1st**	**6th**	**6th**	**6th**

Aggregating the important requirement of the various service areas, table 6.19 highlights colour and taste (quality) of water supply as the most important among the requirements to the customers. This agrees with the overall FCT important requirement in table 6.17. This is an important finding, as reliability (continuous) of water supply was expected to be important to the customer.

6.7.3 Customer Satisfaction Mean and Ranking for FCT

The FCT satisfaction mean score is further determined after the importance mean score in section 6.7.2. Taste, colour and courtesy scored first second and third in

Table 6.20: FCT Customer Satisfaction Mean Score

Customer Requirement	***Satisfaction Mean***	***Rank***
Taste/Smell	8.11	1st
Colour	8.02	2nd
Courtesy	7.78	3rd
Pressure	7.24	4th
Reliability	7.19	5th
Knowledge	7.18	6th
Helpfulness	6.83	7th
Billing	6.29	8th

Satisfaction ranking of the overall FCT, while pressure, reliability, knowledge, helpfulness ranked fourth, fifth, sixth and seventh. The customers are least satisfied with billing which scored lowest in table 6.20 and ranked eight.

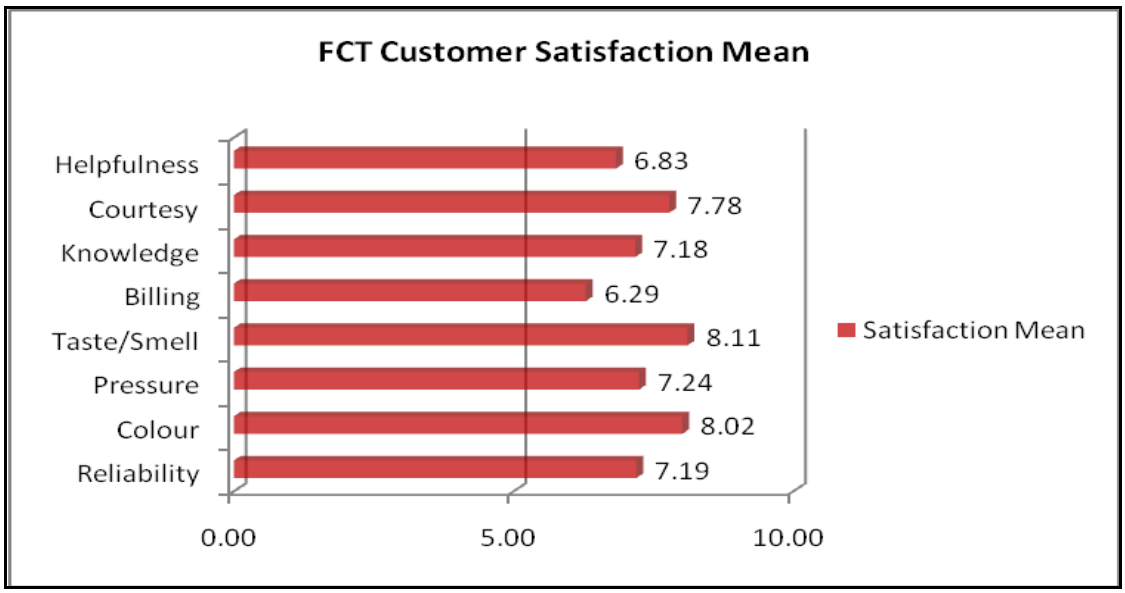

Figure 6.59: FCT Customer Satisfaction Mean Score

6.7.4 Service Areas Satisfaction Mean Scores and Ranking

Table 6.21: Service Areas Customer Satisfaction Mean Score

Service Area Customer Satisfaction Mean								
Service Area	Reliability	Pressure	Taste	Billing	Colour	Knowledge	Courtesy	Helpfulness
Asokoro	6.53	6.00	8.40	5.48	8.27	8.00	8.00	7.50
Buari	4.67	8.00	8.00	8.00	8.00	8.00	8.00	9.00
Garki	6.54	8.02	8.44	6.64	8.30	8.00	8.14	7.43
Gudu	8.47	8.47	8.40	6.33	8.47	7.00	9.00	5.50
Gwagwalada	4.53	7.07	7.33	6.89	7.73	8.00	8.22	6.00
Jabi	8.71	8.59	8.76	7.27	8.24	7.60	7.20	7.20
Karu	4.76	6.06	7.53	6.40	7.53	8.00	8.00	2.13
Kubwa	7.38	7.66	8.09	5.51	7.95	6.70	7.36	6.48
Maitama	6.15	6.18	8.07	5.98	8.15	7.20	8.26	7.05
Wuse	7.98	7.13	7.93	6.97	7.69	7.47	8.32	7.26

Satisfaction within the service areas shows a mixed mean in table 6.22, there is no pattern of satisfaction unlike the important requirements in section 6.7.3. The satisfaction level varies from service area to service area.

Table 6.22: Service Areas Customer Satisfaction Variable Ranking

Service Area Customer Satisfaction Ranking								
Service Area	Reliability	Pressure	Taste	Billing	Colour	Knowledge	Courtesy	Helpfulness
Asokoro	6	7	1	2	2	3	3	5
Buari	8	2	2	2	2	2	2	1
Garki	8	4	1	7	2	5	3	6
Gudu	2	2	5	7	2	6	1	8
Gwagwalada	8	5	4	6	3	2	1	7
Jabi	2	3	1	6	4	5	7	7
Karu	7	6	3	5	3	1	1	8
Kubwa	4	3	1	8	2	6	5	7
Maitama	7	6	3	8	2	4	1	5
Wuse	2	7	3	8	4	5	1	6

Taste scored higher in terms of satisfaction ranking among the service areas, especially in Asokoro, Garki, Jabi and Kubwa, while colour scored next more in other service areas satisfaction ranking.

6.7.5 FCT Service Quality Gap

Having determined the importance and satisfaction mean score for FCT in section 6.7.1 and 6.7.3, the service quality gap and priorities for improvement for the FCT would now be determined. The service quality gaps between satisfaction (perception) and important requirements (expectation) as expressed by the customers to determine the priorities for improvement is presented in table 6.23 and graphically illustrated in figure 6.60.

Table 6.23: Gap Analysis of FCT Important and Satisfaction Mean

Customer Requirement	***Importance Mean***	***Minus***	***Satisfaction Mean***	***Attribute Gap***
Reliability	9.87	-	7.19	=-2.68
Colour	9.98	-	8.02	=-1.97
Pressure	9.82	-	7.24	=-2.58
Taste/Smell	9.98	-	8.11	=-1.87
Billing	9.46	-	6.29	=-3.17
Knowledge	9.07	-	7.18	=-1.89
Courtesy	9.07	-	7.78	=-1.28
Helpfulness	9.07	-	6.83	=-2.24
Overall Gap =	**9.54**	**-**	**7.33**	**=-2.21**

The attributes with the widest gap are top priorities whose gap needs to be closed. The quality of service is not expected to be negative, and where high negative values are derived, it gives room for concern.

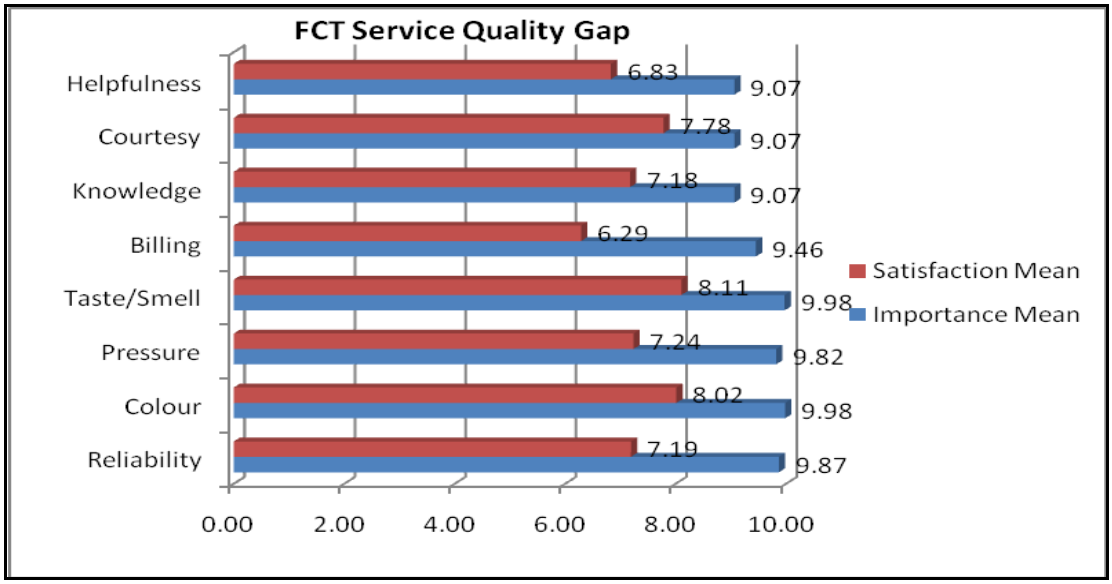

Figure 6.60: FCT Service Quality Gap

Billing has the widest gap (-3.17), followed by reliability (-2.68), pressure (-2.58), while the least is courtesy (-1.28), and a total overall gap of (-2.21).

6.7.6 Urban Service Areas Priorities for Improvement

The service quality gap and priorities for improvement in the ten service areas are classified and grouped into two (urban and peri-urban service areas) for analysis purposes, because their socio-economic characteristics analysed in section 6.3.1 and 6.4.1. The Federal Capital Territory (FCT) has been segmented into service areas within and around the outskirts of FCT. Those that fall within the FCT are classified as the urban service areas and those that fall outside the FCT are classified as peri-urban service areas. The urban service areas are made up of Asokoro, Garki, Gudu, Jabi, Maitama and Wuse service areas, while the peri-urban consist of Buari, Gwagwalada, Karu, and Kubwa.

6.7.6.1 Asokoro Service Area priorities for Improvement

Table 6.24 show that Asokoro service area has a gap of (-2.15), which is low compared to the (-2.21) overall gap for the FCT.

Table 6.24: Asokoro Priorities for Improvement

Customer Requirement	Importance Mean		Satisfaction Mean	Attribute Gap
Reliability	9.93	-	6.53	=-3.40
Colour	9.80	-	8.27	=-1.53
Pressure	9.93	-	6.53	=-3.40
Taste/Smell	10.00	-	8.40	=-1.60
Billing	9.67	-	5.48	=-4.19
Knowledge	8.87	-	8.00	=-0.87
Courtesy	8.87	-	8.00	=-0.87
Helpfulness	8.87	-	7.50	=-1.37
Overall Gap =	**9.49**	**-**	**7.34**	**=-2.15**

The priority area that has the widest gap and needs attention is billing with a mean gap of (-4.19), followed by reliability (- 3.40) and pressure (- 3.40) with tie and ranked second each. Knowledge (- 0.87) and courtesy (- 0.87) has the least gap and tied at seventh each.

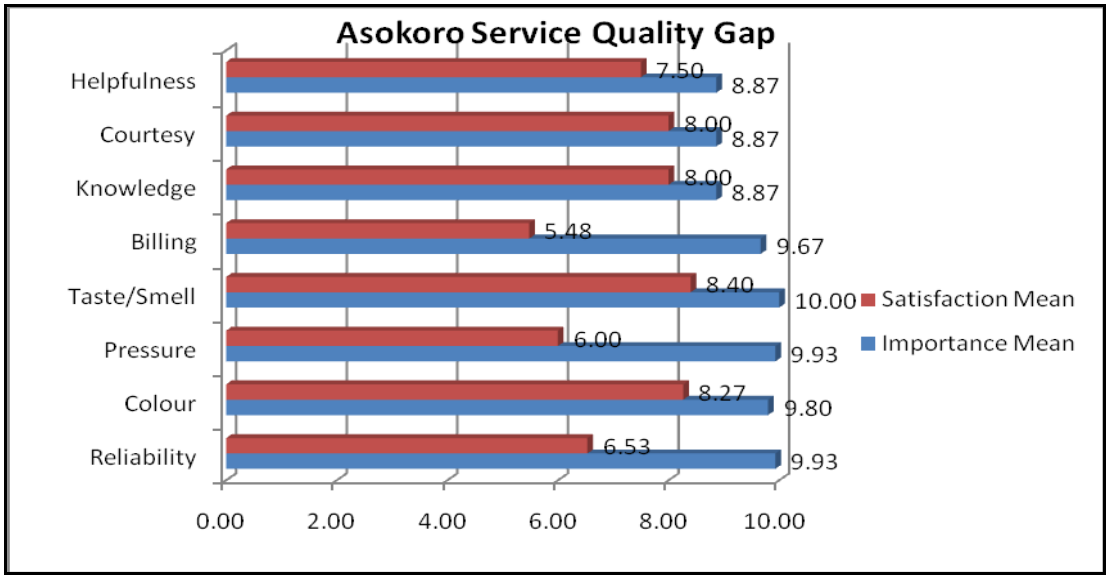

Figure 6.61: Asokoro Service Quality Gap

The priorities for improvement in Asokoro service quality gap is illustrated with figure 6.61 above.

6.7.6.2 Garki Service Area priorities for Improvement

Garki service area with has a service quality gap of (-2.29) in table 6.27 compare to Asokoro service area (-2.15) in table 6.25.

Table 6.25: Garki Priorities for Improvement

Customer Requirement	Importance Mean		Satisfaction Mean	Attribute Gap
Reliability	10.00	-	6.54	=-3.46
Colour	10.00	-	8.30	=-1.70
Pressure	9.98	-	8.02	=-1.96
Taste/Smell	10.0	-	8.44	=-1.56
Billing	9.96	-	6.64	=-3.32
Knowledge	9.74	-	8.00	=-1.74
Courtesy	9.74	-	8.14	=-1.16
Helpfulness	9.74	-	7.43	=-2.31
Overall Gap =	**9.98**	**-**	**7.69**	**=-2.29**

The highest priority is reliability with a gap of (-3.46), while billing ranked second with (-3.32) and helpfulness (-2.31) in table 6.25. Courtesy which ranked eight (last) still has a high mean of (-1.16).

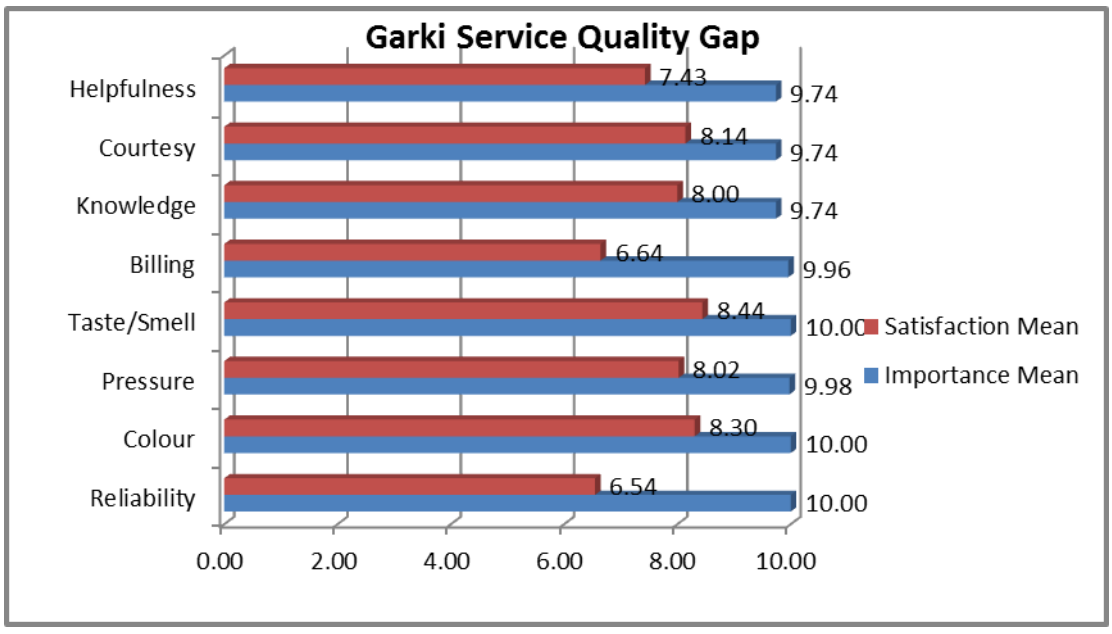

Figure 6.62: Garki Service Quality Gap

Figure 6.62 illustrates service quality gaps for Garki and the priority areas for improvement.

6.7.6.3 Gudu Service Area priorities for Improvement

Gudu has the lowest overall service quality gap in all the service areas both in the urban and the peri-urban service areas of the FCT. Table 6.26 for Gudu service area, shows that there is an overall service quality gap of (-1.80).

Table 6.26: Gudu Priorities for Improvement

Customer Requirement	Importance Mean	Minus	Satisfaction Mean	Attribute Gap
Reliability	9.93	-	8.47	=-1.46
Colour	9.93	-	8.47	=-1.46
Pressure	9.80	-	8.47	=-1.33
Taste/Smell	9.80	-	8.40	=-1.40
Billing	9.93	-	6.33	=-3.60
Knowledge	8.87	-	7.00	=-1.87
Courtesy	8.87	-	9.00	=-0.13
Helpfulness	8.87	-	5.50	=-3.37
Overall Gap =	**9.50**	**-**	**7.70**	**=-1.80**

The priority areas for improvement among the attributes are billing, with a service quality gap of (-3.60). This is closely followed by helpfulness (-3.37) and knowledge of staff (-1.87) respectively.

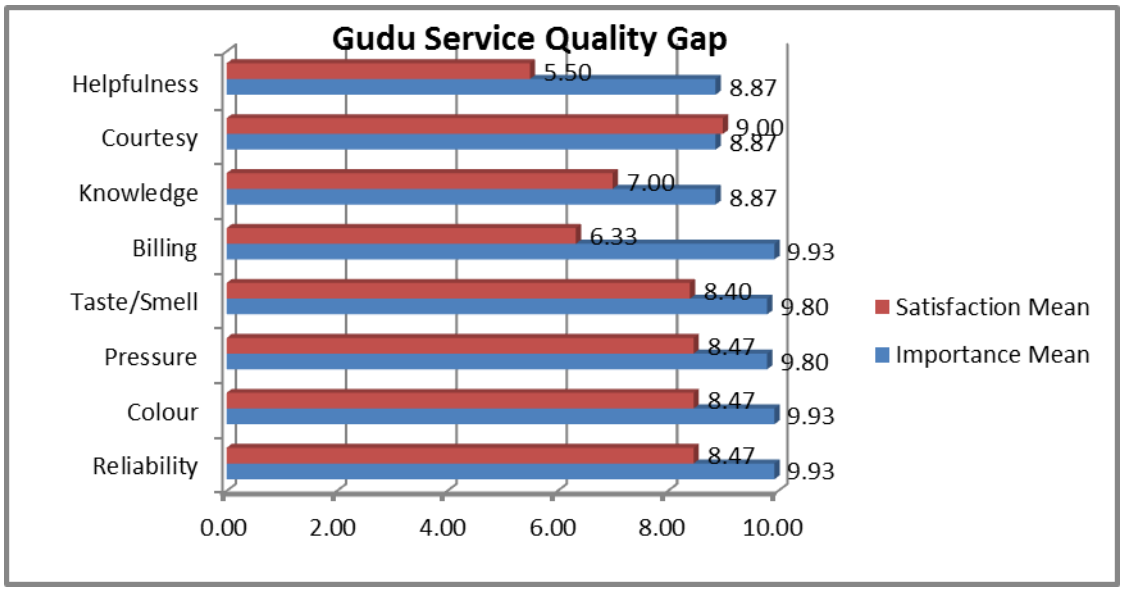

Figure 6.63: Gudu Service Quality Gap

The priorities for improvement for Gudu are illustrated with figure 6.63.

6.7.6.4 Jabi Service Area Priorities for Improvement

Jabi service area recorded the next lowest service quality gap in all the

Table 6.27: Jabi Priorities for Improvement

Customer Requirement	Importance Mean		Satisfaction Mean	Attribute Gap
Reliability	10.00	-	8.71	=-1.29
Colour	10.00	-	8.24	=-1.76
Pressure	9.94	-	8.59	=-1.35
Taste/Smell	10.00	-	8.76	=-1.24
Billing	9.98	-	7.27	=-2.71
Knowledge	9.71	-	7.60	=-2.11
Courtesy	9.71	-	7.20	=-2.51
Helpfulness	9.71	-	7.20	=-2.51
Overall Gap =	**9.88**	**-**	**7.94**	**=-1.94**

service areas of the FCT. The overall service quality gap for Jabi service area from table 6.27 is (-1.94) and the priorities for improvement are billing (-2.71), closely followed by a tie of courtesy (-2.51) and helpfulness (-2.51), then knowledge (-2.11). Others are colour (-1.76), pressure (-1.35), reliability (-1.29) and lastly taste/smell (-1.24) respectively.

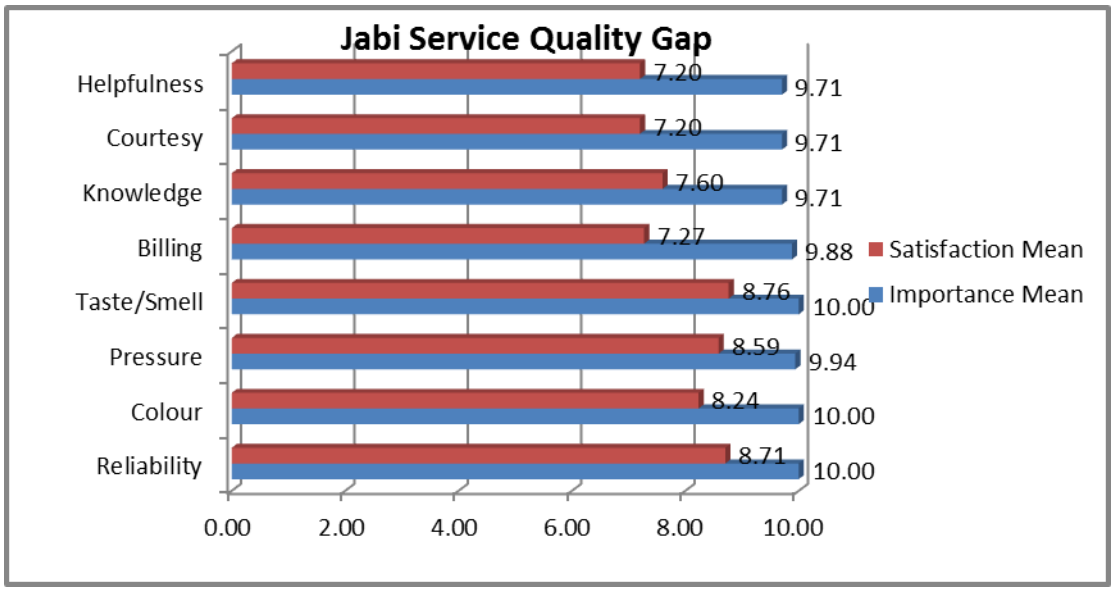

Figure 6.64: Jabi Service Quality Gap

The service attributes service quality gaps are illustrated in figure 6.64 above.

6.7.6.5 Maitama Service Area Priorities for Improvement

Table 6.28: Maitama Priorities for Improvement

Customer Requirement	Importance Mean		Satisfaction Mean	Attribute Gap
Reliability	10.00	-	6.15	=-3.85
Colour	9.98	-	8.15	=-1.83
Pressure	9.95	-	6.18	=-3.77
Taste/Smell	9.98	-	8.07	=-1.91
Billing	9.84	-	5.98	=-3.86
Knowledge	8.91	-	7.20	=-1.71
Courtesy	8.91	-	8.26	=-0.65
Helpfulness	8.91	-	7.05	=-1.86
Overall Gap =	**9.56**	**-**	**7.13**	**=-2.43**

In case of Maitama service area, the service quality gap is (-2.43) in table 6.28. The areas for improvement are also billing (-3.86) closely followed by reliability (-3.85) and pressure (-3.77). The fourth is taste/smell (-1.91), helpfulness (-1.86), colour (-1.83), knowledge (-1.71) and courtesy (-0.65) respectively, which is illustrated in figure 6.65.

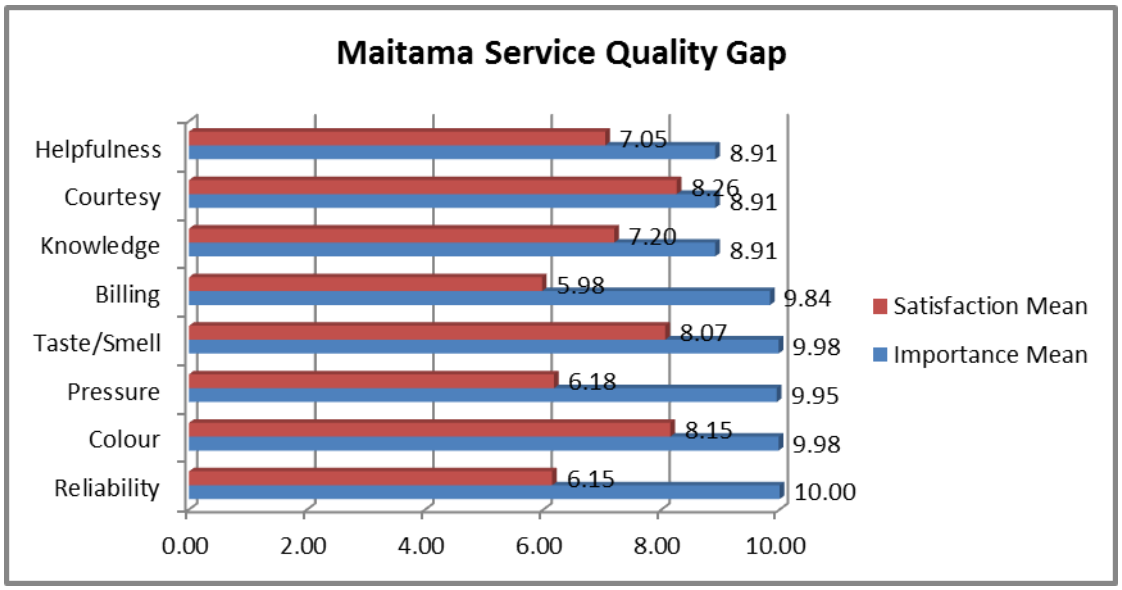

Figure 6.65: Maitama Service Quality Gap

The service attributes quality gaps are illustrated in figure 6.65 above.

6.7.6.6 Wuse Service Area Priorities for Improvement

Table 6.29: Wuse Priorities for Improvement

Customer Requirement	Importance Mean		Satisfaction Mean	Attribute Gap
Reliability	10.00	-	7.98	=-2.02
Colour	10.00	-	7.69	=-2.31
Pressure	9.85	-	7.13	=-2.72
Taste/Smell	10.00	-	7.93	=-2.07
Billing	9.69	-	6.97	=-2.72
Knowledge	8.54	-	7.47	=-1.07
Courtesy	8.54	-	8.32	=-0.22
Helpfulness	8.54	-	7.26	=-1.28
Overall Gap =	**9.39**	**-**	**7.59**	**=-1.81**

Wuse service area has an overall service quality gap of (-1.81) as presented in table 6.29 and illustrated in figure 6.42 below. The priority areas for improvements are billing (-2.72) which tied with pressure (-2.72) and followed by colour (-2.31) and reliability (-2.02). All the urban have less than (-2.0) gap except Maitama, Asokoro and Garki service areas.

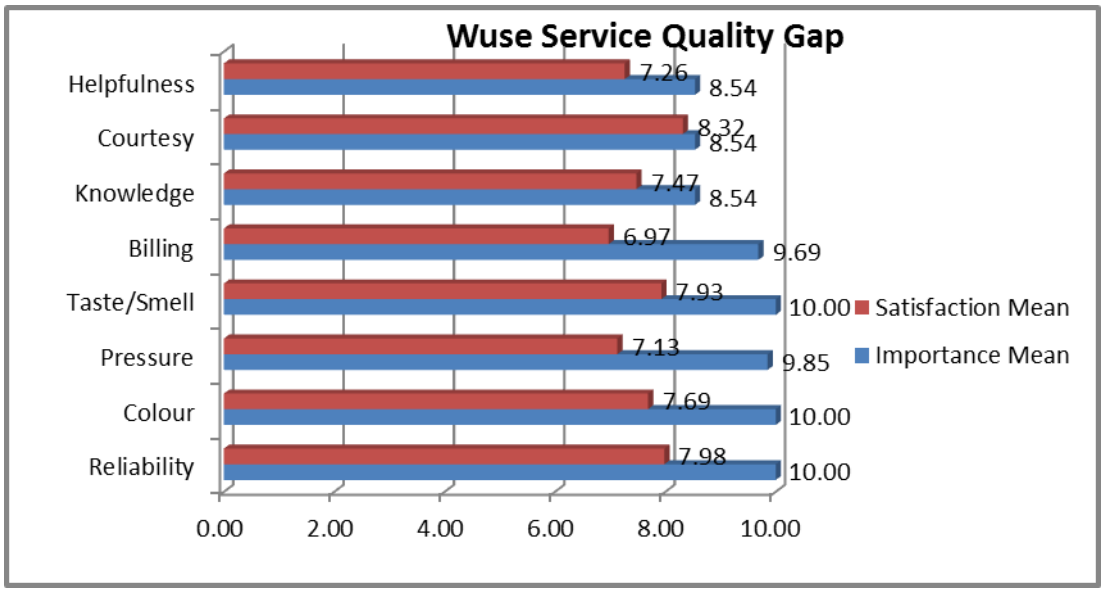

Figure 6.66: Wuse Service Quality Gap

6.7.7 Peri Urban Service Areas Priority for Improvement

6.7.7.1 Buari Service Area Priorities for Improvement

Table 6.30: Buari Priorities for Improvement

Customer Requirement	Importance Mean		Satisfaction Mean	Attribute Gap
Reliability	10.00	-	4.67	=-5.33
Colour	10.00	-	8.00	=-2.00
Pressure	10.00	-	8.00	=-2.00
Taste/Smell	10.00	-	8.00	=-2.00
Billing	10.00	-	8.00	=-2.00
Knowledge	9.67	-	8.00	=-1.67
Courtesy	9.67	-	8.00	=-1.67
Helpfulness	9.67	-	9.00	=-0.67
Overall Gap =	**9.88**	**-**	**7.71**	**=-2.17**

Buari service area where the treatment plant is located has an overall gap of (-2.17) from table 6.30 and illustrated with figure 6.67. The priority area is Reliability which has a gap of (-5.33) which does not have a consistent reading as the other variable and service areas readings. This is because of the high pressure experienced, most of the pipes which are made of asbestos often burst when water is released from the treatment plant.

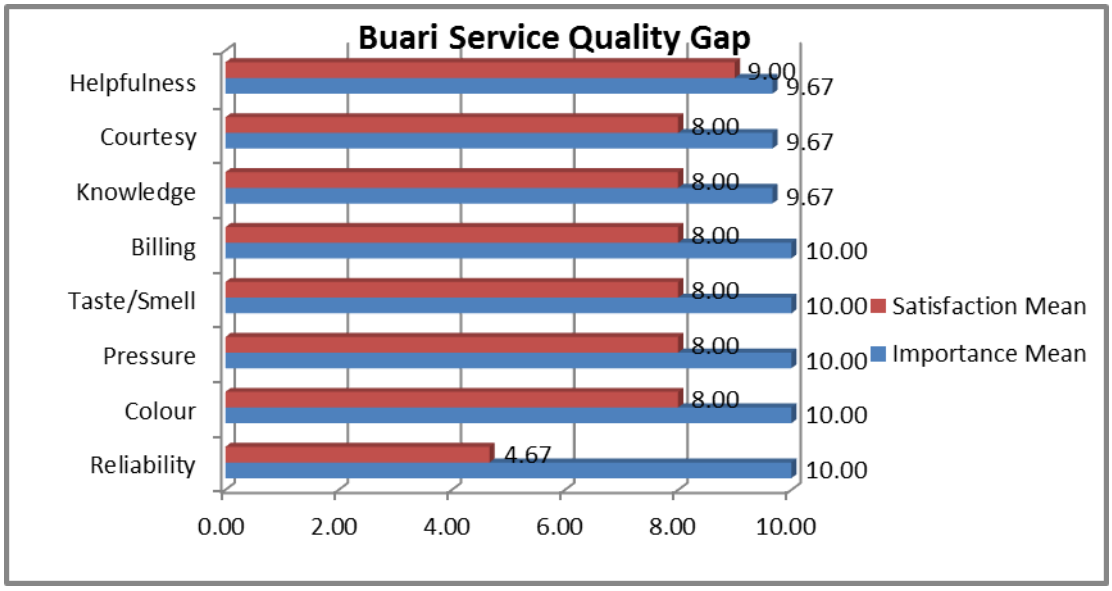

Figure 6.67: Buari Service Quality Gap

6.7.7.2 Gwagwalada Service Area Priority for Improvement

Table 6.31: Gwagwalada Priorities for Improvement

Customer Requirement	Importance Mean		Satisfaction Mean	Attribute Gap
Reliability	9.60	-	4.53	=-5.07
Colour	10.00	-	7.73	=-2.27
Pressure	9.80	-	7.07	=-2.73
Taste/Smell	9.93	-	7.33	=-2.60
Billing	9.27	-	6.89	=-2.38
Knowledge	7.80	-	8.00	=-0.20
Courtesy	7.80	-	8.22	=-0.42
Helpfulness	7.80	-	6.00	=-1.80
Overall Gap =	**9.00**	**-**	**6.97**	**=-2.03**

The overall gap for Gwagwalada service area is (-2.03) as presented in table 6.31 and illustrated with figure 6.68. The priority area is also reliability with a high gap reading of (-5.07). Water is rationed to this area because it is at the outskirts of the FCT. Every other service area gets water before it gets to Gwagwalada. Pressure (-2.73) is the next priority followed by taste and smell (-2.60).

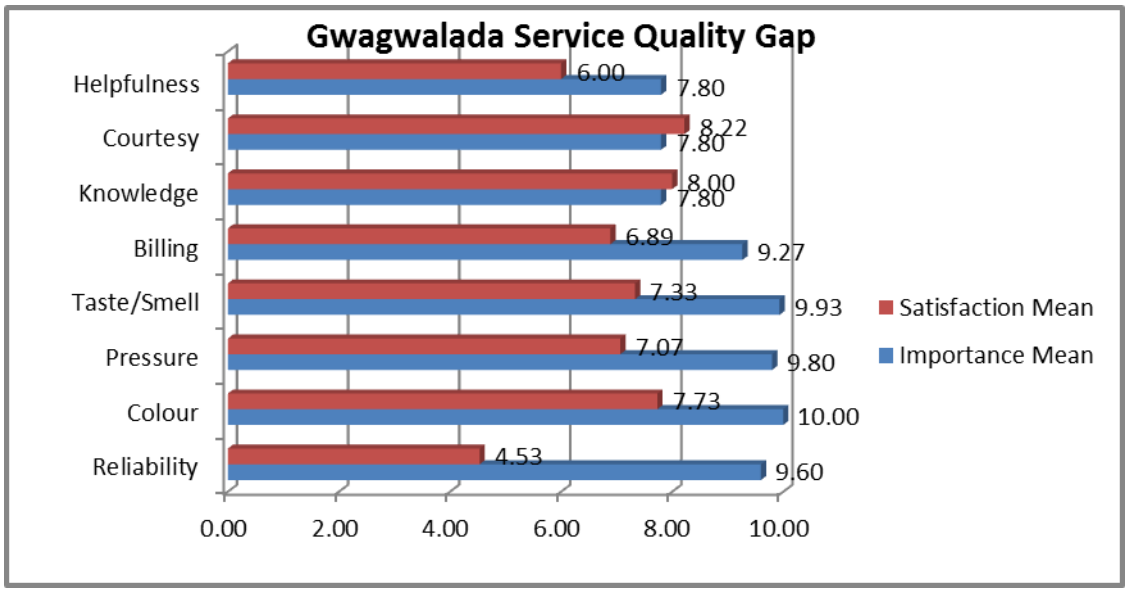

Figure 6.68: Gwagwalada Service Quality Gap

6.7.7.3 Karu Service Area Priorities for Improvement

Table 6.32: Karu Priorities for Improvement

Customer Requirement	Importance Mean		Satisfaction Mean	Attribute Gap
Reliability	10.00	-	4.76	=-5.24
Colour	10.00	-	7.53	=-2.47
Pressure	10.00	-	6.06	=-3.94
Taste/Smell	10.00	-	7.53	=-2.47
Billing	10.00	-	6.40	=-3.60
Knowledge	7.94	-	8.00	= 0.06
Courtesy	7.94	-	8.00	= 0.06
Helpfulness	7.94	-	2.13	=-5.81
Overall Gap =	**9.23**	**-**	**6.30**	**=-2.93**

Karu service area which is also another peri-urban service area, has an overall service gap of (-2.93) from table 6.32. Helpfulness (-5.81) ranks high as the priority area gap to be addressed, followed by reliability (-5.24). The next is pressure (-3.94) and billing (-3.60) is illustrated with figure 6.69.

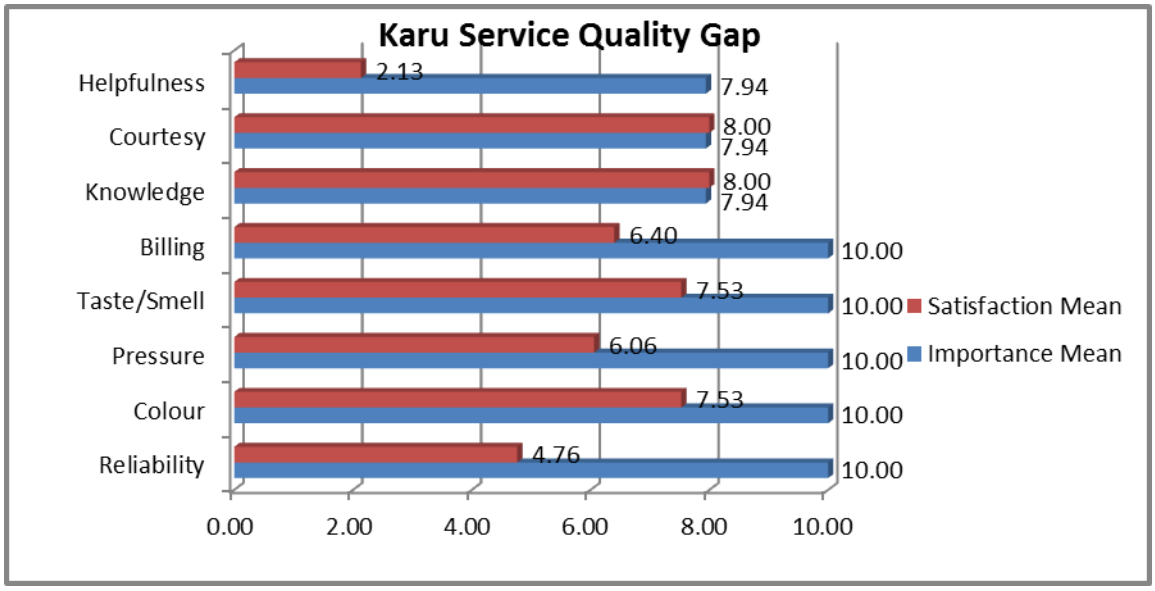

Figure 6.69: Karu Service Quality Gap

6.7.7.4 Kubwa Service Area Priority for Improvement

Table 6.33: Kubwa Priorities for Improvement

Customer Requirement	Importance Mean		Satisfaction Mean	Attribute Gap
Reliability	9.63	-	7.38	=-2.25
Colour	10.00	-	7.95	=-2.05
Pressure	9.63	-	7.66	=-1.97
Taste/Smell	10.00	-	8.09	=-1.91
Billing	8.57	-	5.51	=-3.06
Knowledge	9.54	-	6.70	=-2.84
Courtesy	9.54	-	7.36	=-2.18
Helpfulness	9.54	-	6.48	=-3.06
Overall Gap =	**9.56**	**-**	**7.14**	**=-2.42**

Kubwa service area has an overall service gap of (-2.42) as presented in table 6.33 and illustrated with figure 6.70. The priority area to be addressed is a tie of billing (-3.06) and helpfulness (-3.06). This is followed by knowledge (-2.84) and reliability (-2.25).

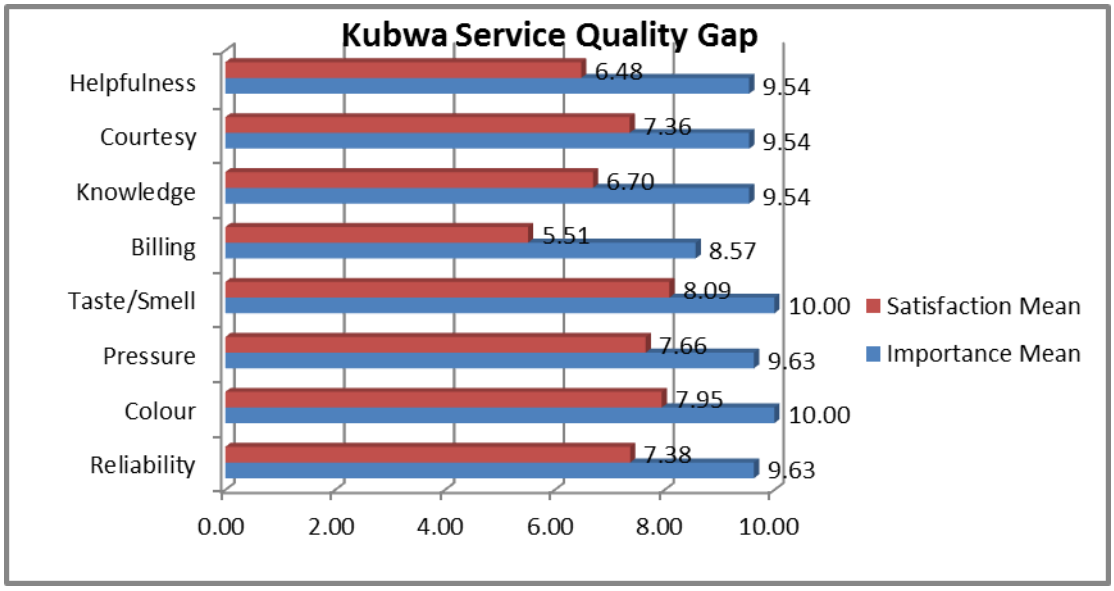

Figure 6.70: Kubwa Service Quality Gap

6.8 Customer Satisfaction Index

Customer satisfaction index (CSI) is used to benchmark the rate of satisfaction between service areas. This analysis used the frequencies generated from satisfaction attributes using SPSS 16 for benchmarking purposes between the segmented service areas and other utilities. The verbal scale was transformed to numerical scale by allotting numerical weights to frequencies on a scale of 2-10. Numerical weights are multiplied by frequency and the average taken to derive the satisfaction mean using satisfaction attributes. The same procedure used to derive satisfaction mean is repeated using Importance attributes to derive Importance Mean. The importance mean is then summed up and the value used to divide each of the importance mean to get the weighted factor in percentage. The weighted factor multiplied by the satisfaction mean gives the weighted score for each attributes. The average weighted score is then multiplied by 10 to derive the Customer Satisfaction Index (CSI). The overall FCT customer is presented in table 6.44 and the service area customer satisfaction index benchmark is presented in table 6.45.

6.8.1 Urban Service Area Customer Satisfaction Index

6.8.1.1 Asokoro service Area Customer Satisfaction Index

Asokoro service area has a customer satisfaction index of 72.5% in table 6.34, compared to the overall FCT customer satisfaction index of 73.4% in table 6.44.

Table 6.34: Asokoro Customer Satisfaction Index

Customer Satisfaction Index for Asokoro

Customer Requirement	**Importance Mean**		**Weighting Factor**	**Satisfaction Mean**	**Weighted Score**
Reliability	9.93	0.13	13%	6.53	0.85
Colour	9.80	0.13	13%	8.27	1.07
Pressure	9.93	0.13	13%	6.00	0.78
Taste/Smell	10.00	0.13	13%	8.40	1.11
Billing	9.67	0.13	13%	5.48	0.70
Knowledge	8.87	0.12	12%	8.00	0.93
Courtesy	8.87	0.12	12%	8.00	0.93
Helpfulness	8.87	0.12	12%	7.50	0.88
Total	**75.93**				**7.25**
				CSI	**72.5%**

Asokoro service area recorded the next least customer satisfaction index in the urban service areas.

6.8.1.2 Garki Service Area Customer Satisfaction Index

Garki service area recorded a customer satisfaction index of 76.9% as shown in table 6.35 in relation to the overall FCT customer satisfaction index of 73.4% in table 6.44.

Table 6.35: Garki Service Area Customer Satisfaction Index

Customer Satisfaction Index for Garki					
Customer Requirement	**Importance Mean**		**Weighting Factor**	**Satisfaction Mean**	**Weighted Score**
Reliability	10.00	0.13	13%	6.54	0.83
Colour	10.00	0.13	13%	8.30	1.05
Pressure	9.98	0.13	13%	8.02	1.01
Taste/Smell	10.00	0.13	13%	8.44	1.07
Billing	9.96	0.13	13%	6.64	0.84
Knowledge	9.74	0.12	12%	8.00	0.98
Courtesy	9.74	0.12	12%	8.14	1.00
Helpfulness	9.74	0.12	12%	7.43	0.91
Total	**79.15**				**7.69**
				CSI	**76.9%**

6.8.1.3 Gudu Service Area Customer Satisfaction Index

Gudu service area recorded a customer satisfaction index of 77.2% as presented in table 6.36, which is next to Jabi Service area and in comparison to the FCT overall customer satisfaction index of 73.4%.

Table 6.36: Gudu Service Area Customer Satisfaction Index

Customer Satisfaction Index for Gudu					
Customer Requirement	**Importance Mean**		**Weighting Factor**	**Satisfaction Mean**	**Weighted Score**
Reliability	9.93	0.13	13%	8.47	1.11
Colour	9.93	0.13	13%	8.47	1.11
Pressure	9.80	0.13	13%	8.47	1.09
Taste/Smell	9.80	0.13	13%	8.40	1.08
Billing	9.93	0.13	13%	6.33	0.83
Knowledge	8.87	0.12	12%	7.00	0.82
Courtesy	8.87	0.12	12%	9.00	1.05
Helpfulness	8.87	0.12	12%	5.50	0.64
Total	**76.00**				**7.72**
				CSI	**77.2%**

6.8.1.4 Jabi Service Area Customer Satisfaction Index

Jabi service area in table 6.37 recorded an impressive customer satisfaction index of 79.5% which is high in comparison to the overall CSI of 73.4%. This is the highest CSI among the service areas segmented.

Table 6.37: Jabi Service Area Customer Satisfaction Index

Customer Satisfaction Index for Jabi					
Customer Requirement	**Importance Mean**		**Weighting Factor**	**Satisfaction Mean**	**Weighted Score**
Reliability	10.00	0.13	13%	8.71	1.10
Colour	10.00	0.13	13%	8.24	1.04
Pressure	9.94	0.13	13%	8.59	1.08
Taste/Smell	10.00	0.13	13%	8.76	1.11
Billing	9.88	0.13	13%	7.27	0.91
Knowledge	9.71	0.12	12%	7.60	0.93
Courtesy	9.71	0.12	12%	7.20	0.89
Helpfulness	9.71	0.12	12%	7.20	0.89
Total	**78.94**				**7.95**
				CSI	**79.5%**

6.8.1.5 Maitama Service Area Customer Satisfaction Index

Maitama service areas as presented in table 6.38 recorded the lowest customer satisfaction index of 71.2% within the urban service areas. This is lower than the overall customer satisfaction index of 73.4%.

Table 6.38: Maitama Service Area Customer Satisfaction Index

Customer Satisfaction Index for Maitama					
Customer Requirement	**Importance Mean**		**Weighting Factor**	**Satisfaction Mean**	**Weighted Score**
Reliability	10.00	0.13	13%	6.15	0.80
Colour	9.98	0.13	13%	8.15	1.06
Pressure	9.95	0.13	13%	6.18	0.80
Taste/Smell	9.98	0.13	13%	8.07	1.05
Billing	9.84	0.13	13%	5.98	0.77
Knowledge	8.91	0.12	12%	7.20	0.84
Courtesy	8.91	0.12	12%	8.26	0.96
Helpfulness	8.91	0.12	12%	7.05	0.82
Total	**76.49**				**7.12**
				CSI	**71.2%**

6.8.1.6 Wuse Service Area Customer Satisfaction Index

Wuse service area as presented in table 6.39 recorded a customer satisfaction index of 75.9% in comparison to the overall customer satisfaction index of 73.4%.

Table 6.39: Wuse Service Area Customer Satisfaction Index

Customer Satisfaction Index for Wuse					
Customer Requirement	**Importance Mean**		**Weighting Factor**	**Satisfaction Mean**	**Weighted Score**
Reliability	10.00	0.13	13%	7.98	1.06
Colour	10.00	0.13	13%	7.69	1.02
Pressure	9.85	0.13	13%	7.13	0.93
Taste/Smell	10.00	0.13	13%	7.93	1.05
Billing	9.69	0.13	13%	6.97	0.90
Knowledge	8.54	0.11	11%	7.47	0.85
Courtesy	8.54	0.11	11%	8.32	0.94
Helpfulness	8.54	0.11	11%	7.26	0.83
Total	**75.15**				**7.59**
				CSI	**75.9%**

6.8.2 Peri-Urban Service Area Customer Satisfaction Index

6.8.2.1 Buari Service Area Customer Satisfaction Index

Buari service area as presented in table 6.40 has an impressive customer satisfaction index of 77.0% in comparison to the overall CSI of 73.4%.

Table 6.40: Buari Service Area Customer Satisfaction Index

Customer Satisfaction Index for Buari					
Customer Requirement	**Importance Mean**		**Weighting Factor**	**Satisfaction Mean**	**Weighted Score**
Reliability	10.00	0.13	13%	4.67	0.59
Colour	10.00	0.13	13%	8.00	1.01
Pressure	10.00	0.13	13%	8.00	1.01
Taste/Smell	10.00	0.13	13%	8.00	1.01
Billing	10.00	0.13	13%	8.00	1.01
Knowledge	9.67	0.12	12%	8.00	0.98
Courtesy	9.67	0.12	12%	8.00	0.98
Helpfulness	9.67	0.12	12%	9.00	1.10
Total	**79.00**				**7.70**
				CSI	**77.0%**

This is the highest CSI within the peri-urban service areas and it is because of its proximity to the treatment plant located within the service area.

6.8.2.2 Gwagwalada Service Area Customer Satisfaction Index

Gwagwalada service area as presented in table 6.41 recorded a customer satisfaction index of 69.5% which is lower than the overall CSI of 73.4%. This is expected because it is among the peri-urban service areas.

Table 6.41: Gwagwalada Service Area Customer Satisfaction Index

		Customer Satisfaction Index for Gwagwalada			
Customer Requirement	**Importance Mean**		**Weighting Factor**	**Satisfaction Mean**	**Weighted Score**
Reliability	9.60	0.13	13%	4.53	0.60
Colour	10.00	0.14	14%	7.73	1.07
Pressure	9.80	0.14	14%	7.07	0.96
Taste/Smell	9.93	0.14	14%	7.33	1.01
Billing	9.27	0.13	13%	6.89	0.89
Knowledge	7.80	0.11	11%	8.00	0.87
Courtesy	7.80	0.11	11%	8.22	0.89
Helpfulness	7.80	0.11	11%	6.00	0.65
Total	**72**				**6.95**
				CSI	**69.5%**

6.8.2.3 Karu Service Area Customer Satisfaction Index

Karu service area as presented in table 6.42 below is also among the peri-urban service areas. It recorded the lowest CSI of 63.2% within both the peri-urban and urban service areas. This is low compared to the overall CSI of 73.4%.

Table 6.42: Karu Customer Satisfaction Area

	Customer Satisfaction Index for Karu				
Customer Requirement	**Importance Mean**		**Weighting Factor**	**Satisfaction Mean**	**Weighted Score**
Reliability	10.00	0.14	14%	4.76	0.65
Colour	10.00	0.14	14%	7.53	1.02
Pressure	10.00	0.14	14%	6.06	0.82
Taste/Smell	10.00	0.14	14%	7.53	1.02
Billing	10.00	0.14	14%	6.40	0.87
Knowledge	7.94	0.11	11%	8.00	0.86
Courtesy	7.94	0.11	11%	8.00	0.86
Helpfulness	7.94	0.11	11%	2.13	0.23
Total	**73.82**				**6.32**
				CSI	**63.2%**

6.8.2.4 Kubwa Service Area Customer Satisfaction Index

Kubwa service area as presented in table 6.43, recorded a CSI of 71.7%. This could be attributed to the proximity of the treatment plant to the service area. The CSI is still lower than the overall of 73.4%.

Table 6.43: Kubwa Customer Satisfaction Area

Customer Satisfaction Index for Kubwa					
Customer Requirement	**Importance Mean**		**Weighting Factor**	**Satisfaction Mean**	**Weighted Score**
Reliability	9.63	0.13	13%	7.38	0.93
Colour	10.00	0.13	13%	7.95	1.04
Pressure	9.63	0.13	13%	7.66	0.96
Taste/Smell	10.00	0.13	13%	8.09	1.06
Billing	8.57	0.11	11%	5.51	0.62
Knowledge	9.54	0.12	12%	6.70	0.84
Courtesy	9.54	0.12	12%	7.36	0.92
Helpfulness	9.54	0.12	12%	6.48	0.81
Total	**76.46**				**7.17**
				CSI	**71.7%**

6.8.2.5 FCT Overall Customer Satisfaction Index

The FCT overall CSI is 73.4% as presented in table 6.44. This is impressive in comparison to other utilities in the UK as presented in table 6.46 who are also officially declared monopolies.

Table 6.44: FCT Customer Satisfaction Index

Customer Satisfaction Index for FCT					
Customer Requirement	**Importance Mean**		**Weighting Factor**	**Satisfaction Mean**	**Weighted Score**
Reliability	9.87	0.13	13%	7.19	0.93
Colour	9.98	0.13	13%	8.02	1.05
Pressure	9.82	0.13	13%	7.24	0.93
Taste/Smell	9.98	0.13	13%	8.11	1.06
Billing	9.46	0.12	12%	6.29	0.78
Knowledge	9.07	0.12	12%	7.18	0.85
Courtesy	9.07	0.12	12%	7.78	0.92
Helpfulness	9.07	0.12	12%	6.83	0.81
Total	**76.31**				**7.34**
				CSI	**73.4%**

Customer satisfaction index should be carried out every year to benchmark and see if satisfaction overall and within the service areas are improving or decreasing.

Table 6.45: Overall FCTWB and Service Areas Customer Satisfaction Index

S/No	*FCT Water Board (FCTWB) Service Areas*	*Customer Satisfaction Index (CSI)*
1.	FCT WB Overall	73.4
2.	Asokoro	72.5
3.	Garki	76.9
4.	Gudu	77.2
5.	Jabi	79.5
6.	Maitama	71.2
7.	Wuse	75.9
8.	Buari	77.0
9.	Gwagwalada	69.5
10.	Karu	63.2
11.	Kubwa	71.7

Table 6.45 presents the benchmarked CSI among the service areas for comparison purposes. Public utilities should strive to attain a minimum CSI of 75% which is not the case in table 6.46 below. Only Scottish and Southern Energy attained above 75%.

Table 6.46: FCTWB and UK and Ireland Utilities Customer Satisfaction Index

S/No	*FCT Water Board (FCTWB) Service Areas*	*Customer Satisfaction Index (CSI)*
1.	FCT Water Board (FCTWB)	73.4
2.	Scottish and Southern Energy (SSE)	75.5
3.	Severn Trent Water	72.9
4.	EDF Energy	70.7
5.	Northern Ireland Electricity Services (NIES)	70.4
6.	E.ON	70.4

Source: Institute of Customer Services (2010)

6.9 Chapter Summary

This chapter analysed and presented the results of the quantitative data which answers the research questions. The qualitative data collected during the exploratory phase was used to generate information required in the questionnaire survey and for validating the analysed quantitative data and attached as an appendix. The scales used for the measurement are numerical scales that have been validly tested statistically and found to be reliable for customer satisfaction measurement by various researchers (Hill et al, 2007; Parasuraman et al, 1991). Preliminary analysis was carried out using SPSS 16 and 17 software to check for errors and missing system.

Various statistical test and analysis was carried out on the data to explore the characteristics of the demography and socio-economic data set through the identification of a value within the data that represents the degree of typicality known as measures of central tendency and dispersion.

- ☐ Frequency distribution and charts were used to describe the demographic characteristics which classify the socio-economic pattern of respondents to determine the characteristics of water supply to between the high density areas within and the sub-urban areas against the low and medium density

areas of the Federal Capital Territory. Types of connection associated with billing of the service areas, if they complain and the methods used in communicating officially with their water service provider when not happy with the level of service provided.

- Categorical data such as important customer requirements, satisfaction level and loyalty were analysed through descriptive statistics after which cross tabulation and chi-square test was used to explore if there are significant relationships among the variables to confirm or disprove the hypothesis.

- Further (Inference) statistics such as scatter gram correlation was used to test if there are relationships and also determine the direction and strength of the relationships between the satisfaction variables, and regression analysis was used to determine the predictor variables which best predict the degree of variance of the ranked numerical data of the overall satisfaction.

- Gap analysis was then used to determine the gap between what customers get and what they expect, and a customer satisfaction index to determine the level of satisfaction and benchmarking with other public utilities in the UK.

The next chapter discusses the findings from both qualitative and quantitative chapters.

7 Discussions of Qualitative and Quantitative Findings

7.1 Chapter Introduction

. This chapter discusses all the findings from the analysed data as presented in chapter five and six. The exploratory phase preceded the main questionnaire survey. To go over the research question again, the primary research question is:

> ***"How can the performance of public water utilities in Nigeria be objectively assessed in terms of service quality from the customers' point of view and highlight their priorities for improvement over a period of time"?***

The primary research question, which is further broken down into secondary questions to aid this research are:

- ☐ How do public water utility customers in Nigeria complain, when not satisfied with the service quality provided?
- ☐ What satisfaction indicator can best predict the overall satisfaction and be used to monitor the service quality of public water utilities over a period of time?
- ☐ What are the customer's important requirements and the level of satisfaction of public water utility customers?
- ☐ What are the service quality gaps and the priority areas for improvement?

This research set out to investigate how the technical and functional qualities of public water utilities in Nigeria can be assessed from the customers' feedback and identify their priorities for improvements over a period of time. Having undertaken a customer satisfaction survey and exploratory case study, this chapter will tie in the survey findings and the case studies with the view of identifying common grounds, lessons to be learnt and a number of issues associated with the research. Similarities and dissimilarities have been observed in the collected data, in the course of the main survey and the qualitative (exploratory) phase and certain trends are familiar to both the survey data and the qualitative data. While the survey is meant to give statistical insight and numerical outlook to the research, the qualitative data balances

the research by bringing in depth understandings, about tends in the case study. Conclusions are then drawn based on the combination of both the qualitative and quantitative research methods utilised.

7.2 Public Water Utility Performance

This section is an introduction to the next sections which finds answer to the research questions. It relates back to literature in section 2.2 about the water supply situation in low income developing countries. Faced with difficulties of maintaining ageing infrastructure, water utilities performances in low income countries is a thing of public concern (Khatri and Vairamorthy, 2007). This section gives an overview of the data on water supply characteristics in the study location (Federal Capital Territory, Abuja). The technical and functional qualities of water service provision, has been taken into account in the developed assessment framework, unlike the SERVQUAL model in section 2.6 of literature which focuses on the functional quality of service provision only (Parasuraman et al, 1988; 1990). The assessment of the performance of FCT Water Board in terms of technical (product) and functional (customer service) quality as analysed in section 6.3.3 and 6.3.4, which confirms literature in section 2.2 and problem statement in section 1.2, that most utilities in low income countries like Nigeria are failing to provide efficient services to their customer (Hall, 2006).

7.2.1 Water Supply Characteristics and Willingness to Pay

Water supply and sanitation are vital in ensuring that the population of a country or community remains healthy, and also plays a vital role as part of the social and economic infrastructure. It is crucial that safe and sustainable water supply is provided at all times without harming the environment. Findings from the analysis in section 6.3.3, figure 6.11 established that water supply is characterised by intermittent supply. Only 27% receive continuous water supply, while 33% get supply everyday but not continuously. The remaining 40% get water supply from every other day to once a week or in three months. Those living in the outskirts of the city which is described as the peri-urban are worse off as water supply is rationed to only six hours supply officially, every other day. Customers have to supplement their supply with other sources, from figure 6.10, 67% supplement with supply from the water vendors, while others supplement their supply with yard borehole (6%), mobile tanker (4%), yard well (5%), and bottled water (2%). It was observed that customers in the peri-urban, with irregular water supply are more willing to pay more for a reliable potable water supply to their premises in comparison to those with steady water

supply from the FCT Water Board mains. This might be because of the enormous cost of supplementing their water supply in cash and in person. Most of them work in the city, and on their way to work, they carry jerry cans which they fill with water at their respective places of work and bring back home for drinking and cooking, while hand dug wells are used for washings.

A customer complained at the customer forum organised at Gwagwalada peri-urban from content analysis presented in appendix 4a that: *"Water bills keep coming for water we did not get, water is rationed for six hours in alternate days. The Water Board determines when and the time water would be given without preference for a particular time that is suitable to us. At times, water comes in the night when we might have gone to bed after a hard day's work, and sometimes water comes when we have gone to work. They should learn to be consistent so that we can plan our schedule around when water would be released, if they cannot give at a preferred time."* Water supply is not continuous twenty four hourly at the suburbs of the City of Abuja, as a result of rationing due to inadequate production capacities to meet the water demand of connected customers in the Federal Capital Territory. The customers in the outskirts of the city are billed using flat rate, they are charged at the end of the month, whether they get water or not. This might be a ploy to increase revenue where service is not received by the FCT Water Board customers, or because water meter is not available. A similar thing happened with the electricity company in Nigeria, when all customers started connecting using prepaid meter which would only charge when power is used, made the Electricity Company to lose so much revenue that it regretted allowing the use of prepaid meters and even contemplated reverting back to billed metering which is not reliable. They have now made prepaid meter credit units unavailable, so that customers can be charged a flat rate, a ploy which has not gone down well with the public. This confirms the proposition that *"the urban poor who live at the fringes of the urban cities or towns and high density areas are more likely to get low quality of service and are not likely to be satisfied with the level of service received by them" (WHO, 2010; McIntosh, 2003)*.

7.2.2 Connection and Billing Efficiency

7.2.2.1 Efficiency and financially Sustainability public water utilities (SWA's):

While utility companies in developing countries are still grappling with poor customer service and satisfaction, utilities companies in developed countries are moving into a generation of customer web interaction for customer retention. As they continue to improve their existing web sites for account management and better communication with customers in areas such as bill payment, meter reading, change of address, start and stopping service functions, leaks and outage communications, new web based mediums which add a whole new dimensions to communicating with customers are now available such as face book, twitter, YouTube and Skype. As a result of customer engagement, the utilities are able to rise up to the challenge through continued dialogue to cope with any increase in customer expectation.

It was observed during field work at FCT Water Board Abuja, that customers don't have a direct cordial relationship with the water Board. No formal contract (agreement) exists between the FCT Water Board and its customers, and so customers are like a "third party individual" in the relationship. Majority of the names on the water bills do not belong to customers but bear the landlord (Building owner) or previous occupants' names, the previous tenants often walk away leaving huge debts behind for the next occupants. This has made them consumers rather than customers. Customer charter which states the commitment of FCT Water Board and what is expected of customers and complaint procedure for FCT Water Board customers if not satisfied with service is also not in existence. The process of effecting change of name on the connections for billing is not transparent but subject to corruption. The documents requested to effect name change or fresh connections are not realistic i.e. certificate of occupancy (C of O) of property with no option like tenancy agreement. Most occupiers of properties don't have a legal status to the property they occupy, either it is a temporary accommodation belonging to a brother or relative, or third party occupants who took over the property to exhaust the unexpired term of a subsisting (legal) tenant.

Before an organisation sets up an enterprise in a competitive market, it carries out feasibility studies, and develops a business and viability plan, with a particular customer in mind. But unfortunately, most public utilities were created to run the infrastructure as a social service, rather than both for social and economic purposes.

Findings from the types of connection analysis in figure 6.16 (section 6.3.4) suggest that majority (66%) of the FCWB customers are on flat rate, compared to 34% that are metered connection. With intermittent water supply, this could pose a big challenge in bill collection as customers would not be willing to pay for poor services received, and on the other hand the FCTWB would have used the flat rate for its revenue projections. It was observed as discussed in the earlier section that customers were not happy and willing to pay for bad or services not received. This has led to a lot of disputes and lack of bill payment on the part of the customer, resulting to less than 30% of the customers paying their bills when they are due. Customers are agitating for pre-paid meters, instead of flat rate as water supply is intermittently supplied. Figure 6.18 shows that 42% of the respondents have unsettled bill outstanding, out of which 61% is inherited bill, 17% is disputed, 9% refuse to pay because they do not enjoy regular water supply, while the remaining 13% just refuse to pay. The water board has to result to legal disconnection, before customers are forced to pay before they are reconnected.

FCT Water Board lacked the manpower and logistics to distribute bills to its customer, due to these; it has employed the services of ad hoc staff to distribute bills by hand on its behalf on commission per delivered bill. Figure 6.17 shows that only 97% get their bills monthly, 15% receive their bills quarterly, while others get their bills twice and once a year. Because FCT Water Board has no way on monitoring and verifying if bills have been delivered, most of the bills do not get to the customers when they are due; the bills get dumped somewhere to enable the bill distributors get paid as delivered bills. The FCT Water Board is also in the habit of disconnecting customers wrongly or without notice, and was highlighted by customers as one of the important requirements in section 5.4, during the focus group discussion. Because most of the connections are not metered as earlier stated, to disconnect a defaulting customer, the whole line would be disconnected, there by inconveniencing and making those not owing to bear the brunt of the disconnection. From survey analysis presented in Figure 6.19, out of the 28% that experienced disconnection, 28% were wrongly disconnected, 23% because of inherited bills owed by the previous tenant of the dwelling (this result in negotiated settlement to enable customer liquidate accumulated outstanding bill), while only 34% was as a result of indebtedness. Customers have reiterated their preparedness to pay their bills promptly if water is supplied

Khatri and vairavamorthy (2007) suggests in section 2.2 that the financial sustainability of a service provider, determines how efficient and effective their service provision to its customers would be. From analysis of the audited financial statement obtained during the exploratory phase of the field work in sections 5.2.4 to see how financially sustainable the State Water Agencies are; while FCT Water Board is not dependent on Government for financing its operation and maintenance, water sales and connection fees accounting for 93% and 7% of total revenue for 2008. Water revenue ratio, shows the total revenue generated from water sales compared to other sources and the collection efficiency. A trend in collection efficiency shows that between 2003 and 2008, 69% collection efficiency was achieved, but this declined to 48% in 2008. This signifies danger to the survival of FCT Water Board whose water sales ratio account for 93% in 2008 financial year. This low collection efficiency from investigation is as a result of the combination of customers not been satisfied and lack of motivation of SWAs' employees in terms of incentives as a result of low numeration (salaries and wages), in adequate training and working environment. This is not limited to FCT Water Board alone; two other SWA's (one from the South West region and the other from the South Eastern Region of Nigeria) namely; Lagos State Water Corporation (LSWC) and Cross River State Water Board Limited (CRSWBL), also recorded a low collection efficiency of 41% and 36% respectively of their water bills collected against total water billed for the year 2008. When customers are not satisfied with service received, they are more likely to refuse bill payment and spend that money on supplementing the service through alternative means.

Also, the satisfaction of an organisations employee would impact the service culture of how service is provided (section 2.6.3). A well trained and motivated staff would be efficient in carrying out his duties. From analysis of operation and financial statements of FCT Water Board, a trend was identified both in the collection efficiency ratio and cash collection ratio in figures 5.3. While a decline in the collection efficiency ranging from 77% to 48% between 2004 and 2008, the relationship of water rate to cash operating cost increased from 58% to 132% between 2006 and 2008. There is no enthusiasm on the part of the customers to pay their water bills due to lack of satisfaction with the quality of service and lack of motivation and incentives to the employees who are also internal customers. Most of the SWA employees, when asked if they would prefer to work in another organisation other than their current employees, if given the opportunity stated they would prefer

to work elsewhere. When they were asked why they would want to work elsewhere, they identified lack of motivation and poor numeration as the reason why they would like to work elsewhere. Quoting a frontline staff who said that, *"The numeration they get is not commensurate to the responsibility bestowed on them,"* and most of them including the management staff stated that they are incapacitated by equipment and transport to function optimally by responding to customers complaints. The Chief Executive Officer when asked why morale is low in the work force he responded this way; *"Because we still do not have an Act or edict giving us a legal backing to function as an entity, we are still tied to the civil service grade and salary structure, this has contributed to low morale within the work force. It has been difficult motivating staff to bring out the best in them and retain good and honest hands. As a service oriented organisation, we work round the clock to ensure that water is delivered continuously to the public".* This confirms that the State Water Agency's (SWAs') in low income developing countries are not efficient and financially sustainable to provide quality services to the public (customers).

7.2.2.2 Willingness of the FCTWB Customers to pay for services provided by FCT Water Board to sustain the system:

Because water infrastructure would need to be replaced sometime in the future, it has to be financially sustainable. For water utilities to serve the customers better, it requires the support of the beneficiaries to be financially sustainable and efficient. Customers' requirements and needs have to be taken into account during initiation, implementation and continuation stages. Their willingness to pay for the service, before it is provided and not after the service has to be taken into account. From observation and customer forum carried out and the analysis of survey of connected customers in section 6.4.1.1 of classification of area by annual income; the urban poor mostly residing in the high density areas at the outskirt of the City in the Federal Capital Territory (FCT) such as Buari, Kubwa, Gwagwalada and Karu/Nyanya. All parts of Kubwa and Buari do not experience intermittent water supply and low pressure because the water intake and treatment plant are located nearby at the Lower Usman Dam. The level of satisfaction will be discussed in section 7.4.2. The analysis of the characteristics of water supply in section 6.3.3 shows that most customers in Gwagwalada and Karu do not receive continuous water supply. The poor quality of water supply service will equally impact the willingness to pay of customers. From observation during field work, customers are not willing to pay their bills and according to the Director of Commerce Department in the Federal Capital

territory Water Board (FCTWB) Abuja, less than thirty percent of customers pay their bills as when due (Bello, 2009). This is because of the intermittent water supply and satisfaction with service provided. Analysis shows that the female gender which is a significant proportion (45%) of the respondents, are not willing to pay more and believe that water should be free. This is because the low quality service of intermittent water supply impacts mostly on them, as they are mostly in charge of the home. Invariably, they make use of the water for cooking, drinking and washing. There is also a general belief that water should be provided free by a section of the population during interviews. When a customer was reminded that it cost money to produce water, he expressed his view this way; "*The Government should be able to provide water free of charge with all the oil money stolen and kept in foreign Banks, if they cannot provide water free then they have no business ruling us, because I have not seen a single thing they have done for the masses."* Another quip in this way; *"In Nigeria, everybody is a government on its own, nothing (infrastructure) is working, you have to provide borehole for your family to drink clean water, provide generator to power electricity otherwise you will sleep in darkness, employ vigilante (local guards), otherwise arm robbers would terrorise your neighbourhood; buy a car because there are no functioning public (urban mass) transportation; what else is the responsibility of the government"?*

This notion of expecting free water supply was counteracted by the focus group discussion, which said categorically that water should not be free, but that rates should be realistic and commensurate to the quality of service provided by water service providers. Customers should not be made to pay for services not rendered, prepared meters was endorsed as a solution as against flat rate. When they were reminded of the cost which might not be affordable to all, they suggested that the cost should be paid by instalments with bills as the case with the Electricity utility. In comparison to other utilities like Electricity and Telecommunication from table 6.12, 48% think the rates are too high, while 52% say it is normal with only 1% agreeing that it is too low despite the fact that they spend higher amount per month on supplementing their supply - 30% spend between 2,000 – 4,000 Naira (equivalent of 4-12 US dollars) per month. For an improved water supply, only 21% are willing to pay more while 79% are not willing to pay more than what they currently pay for water supply. This is a dangerous trend as the FCT Water Board which is in dare need of funds for its operation and maintenance seems to have lost the good will of the customers to sustain the system. It could be argued that 79% of the customers

have exited from the FCT Water Board psychologically. If there were alternatives to the services provided by FCT Water Board, they would have exited physically.

Literature in section 2.2 recognised that welfare based (social) objective of supply driven approaches to providing water and sanitation facilities have not worked in both rural and urban area, the demand driven concept of involving the beneficiary communities and stakeholders in the policy, planning and management of water supply and sanitation is recommended. This idea is further based on best practices of what has worked in middle income developing countries like India (McIntosh, 2003). During the early stages of this study, it was confirmed by literature in section 2.2.2 that a new management strategy that would place customers (consumers) in the mainstream of planning, financing, implementation, operating and maintaining their own water scheme would improve the sustainability of water supply as opposed to the agency managed.

7.3 Complaint Management and Service Culture

This section discusses the way public water utility customers in Nigeria complain when not satisfied with the quality of service provided and how the complaints are handled by the water service provider. It involves how customers express their satisfaction and dissatisfaction, and the nature of their complaint. This is important if their voice is to be heard collectively. From literature in section 2.9.5 in most cases, Crow (2002) recognized that it is the service provider that determines how the customers' voice is heard, depending on whether there is a direct or indirect relationship with the customer when not satisfied.

7.3.1 Voicing out grievances when customers are not satisfied with the level of service provided:

How can public water utility customers voice be effectively heard, when they are not satisfied with the service quality provided? Literature (MNI, 2006) in section 1.1 and 2.9.5 has revealed that voice is low and slow in the low income developing countries water sector, unlike communication and energy sectors. Communication between the service provider and the service (user) customer is very vital for the survival of the business. Information needs to be provided about the product and services to potential and existing customers on one part and the customers ought to give a feedback to the service providers about the service received, whether good or bad to motivate them or make adjustments to improve service delivery. This is not always

the case with officially declared monopolies like utilities, especially water and electricity which requires high initial capital and network of transmission and water lines. Complaints are used by many organizations as a barometer of customer feedback. Understanding customers and any issues they may have is a key consideration for any business. Amongst the four main ways of complaining from section 2.8.5 are namely; in person, by telephone, by letter and by email/internet, the telephone currently remains the most popular method of complaining in most developed countries like the UK. The method of complaining by a customer depends on the complaint routes made available to the customer by a service provider and the personality of an individual customer, depending on the time available and seriousness or urgency of the complaint. E-mail complaint is rapidly increasing in developed countries like the UK, while in - person complaint seems to be gradually decreasing and act as a last resort; probably due to the time constraints and because some organisations are making this more difficult with the introduction of recorded voice prompting machines, as against operators and a more expensive premium numbers such as 084 and 087 to phase out normal land lines. This is to discourage customers from calling unnecessarily or at the slightest opportunity.

7.3.2 How water utility customers complain:

Most call centres are being shipped to developing countries by service providers, due to the high volume of telephone calls being experienced and cheap cost of labour to operate them. In contrast, call centres are not in use in most developing countries. Because of that, utility customers still prefer to complain in person because they are not sure their complaint would be responded to if they complain through letter or telephone. Water utility customer's believe that complaining in person, guarantees a faster response from the water utilities employees to their complaint. From complaint analysis graph of case survey in figure 6.21 of Section 6.3.5, most (86%) of those that complained officially to FCT Water Board did so in person, as against 6% that complained by letter and 3% through telephone. This validates the observation from the complaint dairy which records all customer complaints during field work. It was observed that complaints by up to six months, were yet to be acknowledged by the FCT water board due to the complaint handling process which requires all official correspondence to be received by the Director (Chief Executive Officer), who now minutes it out to the appropriate authority. This prevents the Customer Care Unit from capturing all complaints, hence the need not to rely on the number of complaints to determine the satisfaction of customers.

Because utilities in developing countries were established primarily to take care of the social objectives, they are supply driven and not accountable to the service users. This has made most utility customers, prefer not to complain because they do not have confidence in the ability of FCT Water Board to respond to their complaint based on their neighbours experience from mouth to mouth communication. Figure 6.21 shows that only 39% of FCT Water Board customers actually complained when not satisfied with service provided, while the majority (61%) of the respondents choose not to. When asked why they did not complain, the same graph shows that 34% complained to neighbours or unofficially to bill distributors, and 19% did not complain because they do not trust FCT Water Board to respond to their complaint. While 14% did not complain because their neighbour with similar issue already did so, another 14% did not think it is important enough to complain. The remaining 10% and 4% did not know how to complain and about to complaint respectively. Most (85%) of the respondents that complained, said they were promptly attended to by the Customer Care Officer as against 15% in figure 6.22, 71% said they were not advised on the timescale for dealing with their complaint and most of them (85%) said they did not receive a call back or response on their complaint within a reasonable timeframe. Although, 55% of the respondent said they did not have to repeat the call or visit the FCT Water Board customer care centres. Out of the 45% of those that had to repeat their call or visit, 38% had to repeat the call three times, 41% twice and 21% once before their complaint was responded to. This shows that FCT Water Board is not responsive to customers' complaint and customers do not have confidence in them resolving their complaints.

7.3.3 Why Water Utility Customers prefer not to complain formally

Most developed countries in Europe from literature in section 2.6.5, use the number of registered customer complaints to determine the performance of utilities. It is a general belief that dissatisfaction would trigger an increase in the level of complaints, and so complaints could be used as a yard stick for determining the performance of organisations. While this could be adequate for organisations in the competitive market, the same could not be realistic and could be subjective in a monopoly where customers can either exit or voice out their dissatisfaction. The theory of propagation of discontentment (Chakrapani, 1998) in section 2.6.5.2, asserts that only 10% of dissatisfied customers would complain officially to appropriate authorities if not

satisfied with the level of service. Customers prefer to complain informally through 'word of mouth' to neighbours, land lords/caretakers and wrong FCT Water Board employees not in charge of complaints that might not be able to do anything about their situation. Touts posing as FCT Water Board and some 'bad eggs' within the FCT Water Board collude and capitalise on this perceived weakness to defraud innocent customers. Probably, if information has been made available on where and how to complain if encountering any problem with service of dissatisfaction, they would have been encouraged to complain formally, without fear of being cut off or reprimand. Analysis of survey data in figure 6.20 (6.3.4.6) shows that most (74%) of the customers that experienced disconnection said they were not given notice of disconnection before they were disconnected by the FCT Water Board. However, only 39% of the respondents formally complained, while most (61%) of them did not complain as shown in figure 6.21. This agrees with literature in section 2.6.5.2 that public utility customers in developing countries do not complain or voice out their dissatisfaction when not happy with the service provided.

Data analysis in figure 6.21 shows that the reasons for not complaining ranges from not having confidence in FCT Water Board (19%), neighbour already complained and not important (14%), Don't know how to complain (10%), while other (34%) various reasons which bothers on fear of being cut off or sanctioned because of their monopolistic nature accounts constitute the majority. A classic example was a customer that moved into a building, found out that since the house was built over ten years no bill was brought, he went to FCT Water Board to enquire and asked for the bill. He was slammed with an outrageous N600, 000 bill. When he complained through a letter to FCT Water Board requesting that the outrageous bill be waived since he has just moved into the property, he got a letter from the director informing him that since he has occupied the house he has inherited the bill, urging him to go and pay or be disconnected. He paid the sum of N6, 000 in order to avoid disconnection and was still disconnected. He said "*Other tenants now blame me for writing a letter of complaint, they said that even those who have higher inherited bills did not expose themselves through any form or by writing a letter of complaint and they have not been disconnected*". It was observed during field trip to Nigeria that most of the public utility customer care centres visited were ill equipped - to log and track complaints and have no complaint policy, except Lagos State Water Corporation – to respond to customer complaints within a time frame. When customers are dissatisfied with the organisation, they tell many people. It sounds

logical that it's the management that can solve the problem and so dissatisfied customers should channel their complaint to them and not to other people. From literature review in section 2.8.5 and confirmation from data analysis of questionnaire survey in figure 6.21 (section 6.3.5.1) on complaint behaviour of FCT Water Board customers to poor service, the reasons often include:

- Customers don't know their Right:-

  In most public managed infrastructures in developing countries, public water utility customers don't often know their right, which is if they have one. They have no choice of exiting when not satisfied, because of the monopolistic nature of the public water utilities. From observation in table 5.4, using a pre-determined assessment checklist in section 5.3, FCTWB and LSWC do not have customer charter that stipulates the rights of the customer.

- Customers May not Know Who to Complain to:-

  No clear signs of where, and who to lodge complaint to. Enquiries have to be made to find out if it the person behind the counter, in an office somewhere or the manager. And if it's the manager, would an appointment be required?

- Customers are used to their complaint being poorly handled:-

  Customers are badly treated or their complaint responded to with "It's the company policy", as if that should take precedence over any logic or customer concern. There is little or no motivation for customers to complain when the response is going to lead to nowhere. The attitude of frontline staff can be hostile and discouraging.

- Customers may believe that complaining may be an exercise in futility:-

  Customers often find walking out forever to be an easier and pleasant alternative option except the person receiving the complaint is sensitive and caring (which is not a common occurrence).

- No direct and cordial relationship between FCTWB and its customers:-

  It was also observed during field work at FCTWB Abuja that customers don't have a direct cordial relationship that is legally binding with the water Board.

No formal agreement (contract) exists between the Board and its customers, and so customers are like a third party individual in the relationship. Majority of the names on the water bills don't belong to customers but the landlord (Building owner) or previous occupants, the previous occupants or tenants, walk away leaving huge debt on the connection for the next occupants. This has made them consumers rather than customers who pay bills. Customer charter which states the commitment of FCT Water Board and what is expected of customers and complaint procedure for FCT Water Board customers if not satisfied with service is also not in existence. The process of effecting change of name on the connections for billing is not transparent but subject to corruption. The documents requested to effect name change or fresh connections are not realistic i.e. certificate of occupancy (C of O) of property with no option like tenancy agreement. Most occupiers of properties don't have a legal status to the property they occupy, either it is a temporary accommodation belonging to a brother or relative, or third party occupants who took over the property to exhaust the unexpired term of a subsisting (legal) tenant.

7.3.4 Nature and how customer's complaints handled:

Most customers fail to complain because they lack confidence in the ability of FCT Water Board to respond to their complaint based on their neighbours experience from "word to mouth" communication. This is evidenced in section 6.3.5.1 of the survey shows that out of those having issues with FCT Water Board, only 39% of the respondents' complained officially to the Board. The customers that complain have been forced to complain mostly due to inaccurate billing, inherited bills, non-reflection of payments and non-receipt of bills. Federal Capital Territory Water Board (FCTWB) and Cross River State Water Board Limited (CRSWBL) do not have complaint policy and are not aware that they should have one. Lagos State Water Corporation (LSWC) however has a complaint policy with a good complaint tracking system. Each public water utility should have its own internal procedures for handling customer's complaint fairly and expeditiously and ensure the followings:

- Inform their customers that they have a complaint procedure and details of the procedure should be made available at each of the offices, showing how complaints can be made and what further steps are available if they believe that the complaint has not been dealt with satisfactorily either at the area office/customer help desk or higher level within the Board.

- Ensure that all their staff that deals directly with customers are made aware of their institutions' internal complaints procedures and are able to help customers by giving correct information about it.

- All service/area offices should have customer complaints/suggestion boxes and hotlines displayed in a conspicuous place for all to see.

7.3.5 What options do Customers have if their complaints are not responded to within a time frame?

There are no voice (feedback) mechanisms available to public utilities in most low income countries other than an ad hoc customer care centres that are manned by unqualified customer service officers. The option available to water utility customers is not to pay until the bill has accumulated into a huge bill which eventually leads to disconnection, because they do not have a voice. This is a form of psychological exit, where customers are not happy but cannot exit physically because they don't have a voice. From literature such as section 2.9.2, Sohail and Cavill (2006) refer to voice as the pressure that can be exerted on public service providers by organized customers or groups of citizens. It is an option for households receiving poor service and for those without access. This may arise directly through complaint or protest, or indirectly by influencing water utilities through customer representation controlled by democratically elected public officials in a regulatory body. Customer groups in a number of countries like India have championed the use of public feedback mechanisms to improve the performance of public utilities. In UK for example, the Consumer Council for Water (CCW), which regulates the service standards under OFWAT, has been demerged from OFWAT, and is now known as Water Voice; championing the cause of water utility customers. Assessment of utility performance is carried out once or twice in a year, and the results are published for everyone to see if their performance is improving or declining. The results are then indexed into the customer satisfaction index (CSI) database. The rationale behind these efforts is that, due to the monopoly nature of water service provision and prevailing public apathy, public water utilities typically lack the incentives to provide the highest possible service standards. They are not also responsive to customers' needs in most developing countries like Nigeria because they are supply driven and lack incentive to respond quickly to customer's complaint because of their service culture. Findings from the survey data analysis of FCT Water Board complaint handling in section 6.3.5.11, shows that 90% of letter complaint written to FCT Water Board by

their customers were not even acknowledge nor responded to within a time frame and 94% of these said they were not provided with information on how to appeal. Analysis in figure 6.26 shows that only (34%) of those that complaint said it took less than a week to resolve their complaint, while the others took as long as twenty four weeks. Public disclosure of these shortcomings will exert pressure on public service providers that can lead to improvements in their performance and increase the satisfaction of their customers. A third party regulation that would ensure a minimal standard of service is absent in the Nigeria water sector from literature in section 2.2.5; the customers have no choice when their complaints are not respondent to within a reasonable time frame.

7.4 Important Requirements and Level of Satisfaction

7.4.1 Important requirements:

Very few customers are concerned with the friendliness of FCT Water Board staff and their physical structures, but are more concerned with the product quality like the reliability, adequate pressure, colour, smell, helpfulness, courtesy and knowledge of staff. From analysis of overall important requirement mean and ranking in table 6.19 (section 6.7.1), water quality (colour and taste) are very important to customers than other requirements. They tie on ranking as first, followed by reliability of supply which comes third on ranking in order of importance. Customers do not rate continuous (reliability) water supply as a very important requirement compared to quality (safety) because they are able to store for use when water is not available. They would however want water supplied at a convenient time or the officially scheduled time, not intermittently or arbitrarily. A customer said when asked if they complained to the authorities about not having water all the time *"We store water, so we don't have to buy water and so we don't have reason to complain. Some people don't even get water twice a week like we do."* They claim that if water is available twenty four hours a day, customers would start wasting it. A customer who said, "If we complain about the irregular water supply, they may not even give us water again." Customers are apprehensive about the quality of water supply due to particles and the brownish colour noticed when they open their taps, but it clears up after about twenty to thirty minutes. After disruption in supply, water is not always drinkable. This could be due to incessant disconnections due to indebtedness and refusal of customers to pay their bills. This is not done intentionally by most customers as bills are irregularly delivered. Payments are not made for up to two years in some instances were bills

were not received by a customer who said *"Who would go and complain about not receiving bills? So far as they give us water, if they like let them not bring water bill."*

The pressure of water supply ranked fourth, while billing accuracy ranked fifth in order of importance. Courtesy, helpfulness and knowledge of staff tied at sixth position each as customers are indifferent to these from front line staff; they do not think they are more important to the quality and billing accuracy. They do not expect FCT Water Board staffs, which operates as an extension of the Civil Service to show any courtesy, as the financial situation of the Board does not have any effect on their salaries and wages not being paid. The not so poor classified service areas like Asokoro, Garki, Gudu, Jabi and Maitama within the city and the poor service areas at the environs of the city share some similarities and dissimilarities in their important requirements. Gap analysis in table 6.25 of service quality for the FCT shows an overall gap of (-2.21) for all the requirements which is considerable (section 6.7.5). The breakdown of the analysis of areas for improvement shows that billing has the widest gap (-3.17) for improvement, followed in second place by reliability (-2.68) and pressure (-2.58) in the third place. Courtesy (-1.28), which is the least of the gap is still considerably wide and needs to be reduced (to +0). To get a broader view of each service areas, they have been analysed individually as well to see the areas for improvement. The service areas within the city of Abuja, which consist of Asokoro, Garki, Gudu, Jabi, Maitama and Wuse, are consistent with the overall for FCT having billing, reliability and pressure ranking first, second and third as shown in figures 6.26 to 6.30; while the service areas at the outskirt of the city in the FCT such as Buari, Gwagwalada, Karu and Kubwa as shown in figures 6.31 to 6.34, do not have billing within the first three except for Buari and Kubwa, which are located within the catchment area of FCTWB treatment plant. Findings from survey data analysis in table 6.17 of section 6.7.1 show that colour and taste (quality of water supply) are the most important customer requirements. This is in contrast to the focus groups' important requirements in table 5.10 of section 5.4; that shows that reliability of supply is the most important customers' requirement. Reliability of supply as a statement of need is a unit of requirement, unlike the satisfaction attribute in the model which is aggregated.

7.4.2 The level of satisfaction of the connected FCTWB Customers:

The poor performance of public water utilities in terms of service quality, mostly in developing (low and middle income) countries in infrastructure delivery, has been attributed largely due to its supply driven nature. Most lofty projects were conceived and implemented without the input of the stakeholders (beneficiaries), which lead to most of them being abandoned or broken down. This has led to the World Bank and international financial institutions to canvass for demand driven infrastructural delivery. There is a need now for performance of Public Utilities, which are natural monopolies to be assessed through the perspective of the customer in terms of their expectation and satisfaction experience (perception) of the quality of service (product and service) being provided. Accessing public utilities in terms of financial and operational indicator only does not give a good account of their performance, if service provision has to be demand driven. If customers are happy with the service being provided and received, they will not only willingly pay for the service, but be willing to support it to perform very well, thereby becoming a loyal customer. This is encouraged through avenues for feedback, rather than being an antagonist to the service provision since exiting physically is unthinkable for the urban poor through other available options because of the high costs attached to it.

Finding from data analysis in figure 6.29 shows that overall in the FCT, most 73% of the customers were satisfied with the quality of service received from FCTWB. Out of the 73%, only 20% were very satisfied with 53% satisfied, while 24% are dissatisfied, 4% are neither satisfied nor dissatisfied (section 6.3.7.1). Findings also shows that satisfaction vary within each service areas. The highest minimum overall satisfaction is recorded among the low and medium density areas within the FCT, while the lowest overall satisfaction is recorded among the high density areas within and the outskirts of the FCT. The overall satisfaction in the service areas from figure 6.30, shows that Gudu service area recorded the highest overall satisfaction of 100% (33% very satisfied and 67% satisfied), and Jabi recorded the next highest overall satisfaction of 97% (38% very satisfied and 59% satisfied), Garki is next with 94% overall satisfaction (29% very satisfied and 65% satisfied). The least satisfied are the service areas located at the fringes of the FCT, such as Gwagwalada which recorded 3% overall satisfaction level and 83% dissatisfaction, with 13% neither satisfied not dissatisfied, with the exception of Buari and Kubwa that are located within the

FCTWB treatment plant. Karu which is also a satellite service area located at the fringes of the FCT also record 33% overall satisfaction (9% very satisfied and 24% satisfied) with 62% dissatisfied. Asokoro and Maitama, which are located within the city of Abuja, are on elevated and highest part of Abuja in the FCT and so don't often get water when the pressure is low due to the gravity supply system in use. In contrast to other public utilities like electricity and telephone utilities, FCT Water Board seems to be better in terms of product quality (taste and colour). The customer satisfaction mean in table 6.22 of section 6.7.4, agrees with the transcribed interview with the Executive Director of FCTWB in appendix 3a, who stated that: "*FCT Water Board water supply has been adjudged as one of the best in Africa."* The quality of the FCT Water Board drinking water meets the World Health Organisation (WHO) drinking water quality standards. The satisfaction mean score shows that taste, colour and courtesy ranked first second and third respectively, while pressure, reliability, knowledge, helpfulness and billing ranked fourth, fifth, sixth, seventh and eight respectively. This probably accounted for the average level of customer satisfaction recorded due to low expectation of performance. Findings from the data analysis (section 6.8) showed a Customer Satisfaction Index (CSI) of 73.4% in table 6.45, with the customers living in the outskirts of the FCT recording a lower minimum CSI of 63% and are less satisfied with the service quality provided by FCT Water Board. In comparison, the medium and low density areas within the FCT recorded a higher minimum CSI of 71%. The low CSI recorded in high density areas and the peri-urban, confirm the assertion by literature in section 2.3.4 (UNDP, 2006; Kayaga et al. 2007; WHO/UNICEF, 2010) that the urban poor who live in the fringes of the cities in most cases do not benefit from piped water services; and when they do benefit, they are serviced with low quality of service level characterised by intermittent water supply and low pressure

7.4.3 Customer Loyalty:

At times, an unfair perception of service by customers cannot be ruled out due to poor communication, but this does not mean that their concerns should not be taken into consideration. Figure 6.32 shows that 54% of the respondents said they have a changed (improved) opinion in favour of FCTWB after the satisfaction and important requirements scores, while 38% said their opinion about FCTWB remain unchanged and 8% said it has worsened (section 6.3.8.1). Also, the simplest way of knowing if a public water utility customer in an officially declared monopoly is retained or not is to ask if they would remain or exit if given a chance to choose. While 81% (23% very

likely and 58% likely) of the customers from figure 6.33 said they would continue using the services of FCT water Board, while 12% are not likely to remain a customer, 3% are very unlikely and 3% not sure they would remain FCT water Board customers (section 6.3.8.2). On the choice of recommending the FCT Water Board to friends and relatives, figure 6.34 shows that only 12% (3% very unlikely and 12% not likely) said they would not recommend the service of FCTWB to friends and family members, while 3% are not sure if they would recommend or not. But 29% and 56% are very likely and are likely to recommend FCT Water Board to family members and friends (section 6.3.8.3). When asked why they would recommend FCTWB to others when they are not very satisfied with the service level provided, they responded that the alternative would most likely be the same with FCTWB in terms of performance. It therefore shows that the expectations of water or utilities in general in developing countries are low. Customers do not expect much from them in terms of high quality of service.

7.5 Service Quality Gap and Customers Priorities for Improvement

7.5.1 Service Quality Gap:

The service quality gap is the difference between customer needs and priorities, and the customer satisfaction experience (section 6.7.5) which is in most cases negative. Table 6.25 highlights a service gap of (-2.21) for the FCT. The widest service gap within the FCT service areas are at the outskirt of the FCT, otherwise called the peri-urban or satellite towns. At Karu for instance in table 6.33, helpfulness had the widest gap (-5.81), followed by Buari's reliability (-5.33) in table 6.31, while the third and fourth are Karu's reliability (-5.24) in table 6.33 and Gwagwalada's reliability (-5.07) in table 6.32 respectively. These are undoubtedly too wide and shows that service quality to the outskirts are normally poor compared to the standards in the city. Ironically, Karu recorded a positive gap on knowledge (0.06) and courtesy (0.06) in table 6.33. When satisfaction experience does not match the expectation of the customer, a negative gap is derived and when satisfaction surpasses expectation, it results to a positive gap like knowledge and helpfulness. These are monitored by an independent body at intervals of six or twelve months through survey to see if the gaps are closing or widening. The performance of every water utility can then be

published for everybody to see, thereby forcing the water utilities to focus and improve those areas that need attention.

7.5.2 Priority Areas for Improvement:

The priorities for improvement overall in the FCT, among the requirements are those that have the widest gap (section 6.7.5). Billing has the widest gap of (-3.17), followed by reliability of supply (-2.68) and adequate water pressure (-2.58). Courtesy of staff has the least gap (-1.28) in terms of customers priorities for improvement. Among the service areas, those that require attention and improvements are the peri-urban service areas (section 6.7.7). Karu service areas top the list with a gap of (-2.93), followed by Kubwa service area (-2.17), Buari (-.2.420 and lastly Gwagwalada (-2.93). Likewise, the priority areas for improvement are (i) Billing accuracy, (ii) Reliability of supply, (iii) Adequate pressure, (iv) Helpfulness of staff, (v) Colour of water, (vi) Knowledge of staff, (vii) Taste and (viii) Courtesy of staff respectively.

7.6 Customer Satisfaction Indicator that best predicts the Overall Satisfaction

From correlation analysis of the service quality attributes such as reliability, colour, pressure, taste, accuracy of billing, relevant knowledge, courtesy and helpfulness in table 6.11, reliability remains the strongest satisfaction variable that can predict variations in overall satisfaction. While pressure, taste and smell, accuracy of billing and helpfulness of staff remain moderate predictors of overall satisfaction (section 6.5). Colour, relevant knowledge and courtesy of staff however, have weak relationship with overall satisfaction with little variance in change of overall satisfaction, and so are bad predictors. Regression analysis of table 6.12 shows that the proportion of variation (r^2) in overall satisfaction can be attributed to reliability, which is equals to sixty-seven percent (67%). This agrees with the correlation that suggests that there is a strong positive relationship between reliability and overall satisfaction. It suggests that only seven percent (7%) of variation in overall satisfaction is attributed to colour and physical appearance of water supply. It also suggests that nineteen percent (19%) variance in overall satisfaction can be attributed to pressure of water supply. While twenty percent (20%) variance in overall satisfaction can be attributed to taste, it suggests that nine percent (9%) variance in overall satisfaction can be attributed to accuracy of water supply. It suggests that only four percent (4%) of variation in overall satisfaction is attributed to relevant

knowledge of staff and that thirteen percent (13%) variance in overall satisfaction can be attributed to helpfulness of staff, thirteen percent (13%) variance, in overall satisfaction can be attributed to helpfulness of staff. The important service quality attributes perceived by water utility customers such as reliability of supply; billing accuracy; adequate pressure; colour; taste; courtesy, helpfulness and knowledge of staff are good indicators of customer satisfaction and individually, have a strong positive correlation to overall customer satisfaction.

7.7 Chapter Summary

This chapter has reviewed the research questions as set out in the methodology and discussed in details the findings from the analysis carried out in chapter six. Findings show that:

- Public water service providers in Nigeria are not efficient and financially sustainable to provide standard service quality. Water supply is characterised by intermittent water supply with only 27% of connected customers enjoy continuous water supply, while others get rationed supply ranging from eight hours daily, every other day to once a few hours a week. The last categories are mainly those living in the sub-urban areas of the Federal Capital.

- Majority (64%) of the FCT water Board customers, who live at the outskirts of the FCT are not metered and are on a flat rate, irrespective of whether the water service provider supplied the desired quantity or not. This has led to low bill payment and about 42% of customers have unsettled bill outstanding, because they are not happy with service and are not willing to pay for what they have not enjoyed.

- Complaints are not logged in for monitoring if they have been resolved and are not responded to within a short period of time. Customers don't like to complain when not satisfied with service, as they have no confidence that their complaint would be resolved within a short period of time. Only 39% of customers that experienced disconnection complained officially, and customers prefer to complain in person to telephone or letter complaints.

- Customers don't like to complain to FCT Water Board fear of being sanctioned by the FCT Water Board when not happy with the level of service received and because they believe their complaint would not be addressed.

However, they are forced to complain in person due to inaccurate billing, when faced with the threat of disconnection.

- The research findings also highlighted colour and taste (quality of water supply) as the most important customer requirements. Likewise, the priority areas for improvement are (i) Billing accuracy, (ii) Reliability of supply, (iii) Adequate pressure, (iv) Helpfulness of staff, (v) Colour of water, (vi) Knowledge of staff, (vii) Taste and (viii) Courtesy of staff respectively.

- Customer Satisfaction Index (CSI) of 73.4%, with the customers living in the outskirts of the FCT recording a lower minimum CSI of 63% and are less satisfied with the service quality provided by FCT Water Board. In comparison, the medium and low density areas within the FCT recorded a higher minimum CSI of 71%.

- Likewise, the priority areas for improvement are (i) Billing accuracy, (ii) Reliability of supply, (iii) Adequate pressure, (iv) Helpfulness of staff, (v) Colour of water, (vi) Knowledge of staff, (vii) Taste and (viii) Courtesy of staff respectively.

- . Also, the important service quality attributes perceived by water utility customers such as reliability of supply; billing accuracy; adequate pressure; colour; taste; courtesy, helpfulness and knowledge of staff are good indicators of customer satisfaction and individually, have a strong positive correlation to overall customer satisfaction. Correspondingly, reliability of supply predicts substantial (67%) variation in overall customer satisfaction, which in turn is the best predictor of service quality.

The next chapter concludes by summarising all the research questions that leads to the objectives set, highlights the contribution to knowledge, and implications to the stakeholders of the water supply sector.

8 Conclusions

8.1 Chapter Introduction

In the last decade, it has become clear that many urban water service providers are inefficient. Drawing on case studies of the of public water utilities operations to deliver standard service quality in Nigeria; this research attempted to assess the service quality provided by urban water service providers from the customer perspective. It focussed on public water utilities, where there are dismal levels of performance in the service quality provided to the customers. Although, the institutional set-up of public water utilities in low income developing countries might differ slightly, a number of shared challenges such as inefficiency in their operations; resulting to poor service quality. This chapter summarises the research process and identify the main research findings which the objectives of the research set out to achieve, quality and customer satisfaction and suggest areas for further research. It enumerates the contributions to the body of knowledge on service quality and customer satisfaction, and implications to stakeholders of the water sector; specifically, the policy makers, water utilities and customers. It states the limitations and suggests areas for further research.

8.2 Conclusion about the Primary Research Question

"How can the performance of public water utilities in Nigeria be objectively assessed in terms of service quality from the customers' point of view and highlight their priorities for improvement over a period of time"?

The aim of this research is to develop a model customer satisfaction framework to be used for assessing the performance of public water utilities in Nigeria in terms of service quality; and identify the priority areas for improvement from the customers' point of view. This aim was achieved in two sequential phases of exploratory research, which is usually qualitative and consist of observation, individual interview and focus group discussion; and the main customer satisfaction survey, which is a quantitative method. Apart from the richness of data, exploratory research was first conducted before the main survey, because it identify the important customer requirements which will be tested in the main survey to determine customers' satisfaction level and their priorities for improvement. It will also help understand how

customers complain and their nature of complaint. The important requirements are converted into satisfaction variable and tested to determine the correlation with overall satisfaction and regression analysis to determine the variation of each of the satisfaction variables as an indicator for monitoring the service quality of public water utilities in Nigeria. FCT Water Board was chosen as a case study because of its neutrality as a Federal Capital of Nigeria and as model water utility operated and maintained by the Federal Government, unlike the other thirty six state maintained public water utilities.

Voice and exit are the main responses available to customers to address the short comings of public water utilities with poor product and services. Exit mechanisms are viable when there is competition, but are not viable for essential services for which government is the sole provider. Feedback and score cards (Voice mechanisms) are the more likely option for public utility customers receiving poor service from service providers in a monopoly, and customers are faced with little option; to achieve the most effective representation of customer's interest and encourage public water service providers by organized customers or civil societies to improve their services. This may arise directly through publishing of periodic assessments carried out through the number of complaints, or indirectly through customer forums, focus group and satisfaction surveys. Also participating through representation in the regulatory process in cases where utilities are controlled by independent regulator and democratically elected by customer groups for a period of time, can influence water service providers to improve their performances.

Customer and civil society groups, and development agencies can evaluate public water utilities through satisfaction survey and report card conducted independently of the water utilities. From the literatures reviewed, this is an effective voice mechanism for influencing public utilities and service providers to improve their performance. Score cards can however be misleading and counterproductive, if they do not include objective measures of service quality based on clear values that are familiar and understood by respondents. A customer satisfaction survey of water service customers in a developing country like Nigeria, should be carried out by an independent body (preferably an NGO) at least once a year to determine the level of satisfaction and service quality gaps that exists between what the level of service the customers get and what they expect, the needs and priorities of service areas (socio-economic groups), and the customer service index bench marked among the service

areas. The media can also play a role by publishing the report cards annually to exert pressure and inspire competition between public utilities to improve on their performance rating, each year.

8.3 Conclusion about the Secondary Research Questions

How do customers voice out their grievances when not satisfied with the service quality provided and what is their nature of complaint?

The first objective is to find out how public water utility customers register their complaints officially and their nature of complaint, when they not satisfied with the quality of service received. Research findings have shown that FCT Water Board do not log in complaints received for monitoring to see if they have been responded to and most customers prefer not to complain even when not happy with the level of service provided by FCT Water Board. Those that complained officially were forced to complain mostly due to inaccurate billing and inherited bills, and most of the complaint recorded revolves round metering and billing inaccuracies (either over billing or non-reflection of payment). Amongst the four main ways of complaining namely; in person, by telephone, by letter and by email/internet, majority of FCT Water Board customers prefer to complain in person. Water Utility customers don't complain because; customers don't know their right to complain, customers do not know complaint procedures or how or who to complaint to, customers are used to their complaint not been responded to or being handled poorly, customers believe that complaining is a pointless exercise, while others have no direct contract and relationship with the FCT Water Board.

What satisfaction indicator can best predict the overall satisfaction and monitor service quality of public water utilities over a period of time?

The second objective was to identify satisfaction indicators for predicting overall customer satisfaction for monitoring the service quality of public water utilities over a period of time. Findings from correlation coefficient analysis of the satisfaction attributes shows that reliability of water supply remains the strongest satisfaction variable that can predict variations in overall satisfaction; pressure, taste and smell, accuracy of billing and helpfulness of staff remain moderate predictors of overall. Colour, relevant knowledge and courtesy of staff however, have weak relationship with overall satisfaction with little variance in change of overall satisfaction, and so are bad predictors. Correspondingly, reliability of water supply predicts substantial

(67%) variation in overall customer satisfaction, which in turn is the best predictor of service quality.

What are the important customer requirements and level of satisfaction of public water utility customers?

The third objective was to identify the important customer requirements and the level of satisfaction of FCT Water Boar customers. The research findings of the satisfaction survey highlighted colour and taste (quality of water supply) as the most important customer requirements among other requirements; in contrast to the focus group important requirements during the exploratory research. The focus group findings suggests that reliability of water supply is the most important of the customer satisfaction variable for predicting overall satisfaction, amongst billing accuracy, water pressure, water safety and friendliness of staff. FCT Water Board customers need good quality drinking water that is guaranteed of not making them sick if they drink the water, and are not particular on continuous supply to the detriment of drinking water quality. Reliability of water supply comes second among the important requirements, they want to be supplied water at the scheduled day and time to enable them plan their time and save water. Adequate pressure of water supplied comes fourth in the order of priority, followed by accurate billing, while courtesy, relevant knowledge and helpfulness of staff tiered at sixth position. This agrees with the important requirements elicited from customers during the focus group discussion carried out at the initial exploratory phase. A customer focused and more responsive public water utilities are required in Nigeria, which is similar to most developing countries. Customers as stakeholders and direct beneficiary of services are often not consulted to know their views or use feedback from customer complaints to improve service delivery.

What are the service quality gaps and priorities for improvement?

The fourth objective was to determine the service quality gap between what customers expect and what they get and highlight priority areas for improvement. The urban poor, who live at the fringes and high density areas within the city, suffer poor service quality which are characterised by low pressure and intermittent water supply. From case survey, data analysed, those that reside in the outskirts of the city of Abuja, which comprises of Gwagwalada, Karu/Nyayan, with low customer satisfaction index, are mostly the urban poor with low annual family income by area

classification. Kubwa and Buari which are also peri-urban towns, did suffer the same problem as other service areas in the outskirt, and because the intake and the treatment plant are both located within their service area. The survey of water supply characteristics shows that Gwagwalada and Karu only get water for six hours, two or three times a week respectively, and not continuously. Asokoro and Maitama are high density areas of the city which suffers from low water pressure, because of the high ground level and also, most of the houses located in the neighbourhood are high rise buildings. Overall in order of priority, the service quality attributes for improvement are (i) Billing accuracy, (ii) Reliability of supply, (iii) Adequate pressure, (iv) Helpfulness of staff, (v) Colour of water, (vi) Knowledge of staff, (vii) Taste and (viii) Courtesy of staff respectively.

8.4 Implications

8.4.1 To Policy Makers and Utility Managers:

Total reform through the privatisation of public water utilities might not be practicable or difficult to accomplish in low income countries like Nigeria, unlike the UK and other developed countries, because of their weak economies and institutions. A form of partnership with the private sector would be appropriate to break the hold and interference of Governments on public water utilities, and bring in the desired fresh funds that would enable State and Municipal Governments divert such funds to other areas of poverty reduction. One major implication of findings is that water utility mangers should improve the avenues of communication between them and their customers and not see complaint as an indictment, but as a tool for capturing customer's voice about the quality of their service as physical exit is not feasible.

8.4.2 To Researchers and Academics:

To researchers and academicians, this study will contribute methodologically with the standardised customer satisfaction survey instruments to offer an approach for periodic customer satisfaction assessment and monitoring of water utilities performance in terms of service quality, through the lens of the customer. The survey instrument can be adapted as template for generating customer's satisfaction of public water service providers in low income developing countries like Nigeria.

8.4.3 To Utility Customers and Civil Society:

To water utility customers group and the civil society, it offers the use of a model framework for objectively assessing the performance of public water utilities in terms of service quality and overall customer satisfaction through the customers' perspective; for periodic monitoring and benchmarking with other public utilities with similar characteristics. Public water utilities performances are currently being assessed based on the number of complaints made available by the public water utilities to development agencies and civil society groups. An objective third party customer satisfaction surveys should be carried out at least once a year by organised customer representative groups and civil society organisations and the result should be published for all to see. This will put pressure on the public water utilities to improve their service quality.

8.5 Contribution to Knowledge

In general, this research offers an important contribution to the body of knowledge on service quality and customer satisfaction about how the technical and functional qualities of public water utilities in developing countries like Nigeria can be assessed from the customers point of view, using a customer satisfaction framework; and also monitor the customers' priorities for improvement over a period of time. The conclusions have specifically contributed to the following:

This research has defined important customer satisfaction (requirements) indicators for assessing service quality in the context of urban water supply of developing countries like Nigeria; and has developed a model framework for identifying customer priorities and at the same time, monitors the performance of water utilities in terms of technical and functional quality over a period of time. Service quality covers an extremely wide range of service types; a standardised approach to measuring satisfaction and priorities for improvement across sectors is therefore not appropriate. But there is a clear benefit from developing a consistent model framework that can be adapted to meet the needs of public water utilities in developing countries with socio-economic conditions that are compatible to Nigeria. This customer satisfaction model framework provides the most useful approach to identifying service factors that needs to be improved such as, identifying service quality gaps for a number of attributes - such as reliability of supply, adequate pressure, accurate billing, taste and smell, colour and physical characteristics, knowledge, courtesy and helpfulness of staff - through asking separately about expectations and experience. Asking

respondents to rate importance and satisfaction with a number of service quality attributes and asking respondents to rate overall satisfaction with the service received.

- There is a need to define what constitute service quality dimensions in the urban water supply sector of low income developing countries. From literature (Schneider, 1997), the behaviour that constitute service quality in an organisation may not be the same in another i.e. public urban water supply, which are natural monopolies, unlike the hospitality or banking sector which are competitive – where customers have a choice of service provider. This drastically changes the quality dimensions of organisations and priorities of the priorities of customers in developing countries.

- Voice of public water utility customers in developing countries is weak. It has suggested that water utilities should encourage and use feedback as listening tools such as customer forums in every service areas quarterly, focus group discussions twice a year and survey to be carried out once a year; to remedy any deficiencies or satisfaction experienced by customer groups. It has highlighted customers don't complain because they have lost confidence in their ability to respond positively to their complaints; and the nature and method of complaining. Needs and priorities to help improve service delivery and also make them responsive to feed backs.

- It is essential to monitor the quality of service provided by water utilities. This research has identified and tested customer satisfaction indicators for measuring and monitoring the service quality of water utilities from the customers' perspective; by customers and civil society group over a period of time, and benchmarked with other public utilities within and outside each country. This Customer Satisfaction Index (CSI) would be available online as a data base and published periodically by an independent regulatory body or customer representative group for everyone to see. This was established in section 2.8.9 by Paul (1992) and World Bank (2004) that organised feedback and report cards would put the water utilities in the spotlight and challenge the service providers to be more responsive to customer and improve their efficiency, especially if rewards or incentive such as categories of awards (e.g. the best utility or best utility award are given.

- The outcome of this study will also contribute to knowledge by providing a customer satisfaction assessment framework and methodology for use by researchers and academicians for predicting overall satisfaction of utilities, by projecting in to the future anticipated and actual overall satisfaction. Number of complaint has been known not to be a good indicator of customer satisfaction (Chackrapani, 1989; 2001), where there is apathy on the part of the customers to public water utilities due to lack of accountability and responsiveness of public utilities.

8.6 Limitations

Despite the research efforts undertaken for the study, the scope is not without its limitations. The survey concentrated on the views of existing public utility customers only, and excluded the views of the customers of informal water service providers during the research, due to time constraint. The variables, processes, and mechanisms that affect performance are many and, more importantly; they vary from sector to sector and from developed to developing economies. It is very difficult to fully document subtle and behavioural characteristics of various utility customers that often, are key determinants of service quality. For this reason, the study presents a framework for measuring performance of public water utilities in Nigeria, and low income countries with a shared institutional challenges and socio-economical characteristics; but identifies important contributing factors.

8.7 Further Research

- Impact of employee (internal customers) satisfaction on external customers. It has been suggested that the quality of service that the internal customers (employees) receive, strongly influence the quality of service that external customers receive. It will be worthwhile to conduct an employee satisfaction survey of public water utility employees along with customer (external) satisfaction survey to determine their level of satisfaction and the satisfaction gap between the customers and utilities employees.

- This research focused on existing public water utility customers only for their need and priorities. Expanding the scope of the customers to include potential customers who are not connected would enhance the richness of customer needs towards expanding access to water supply at a future date.

- Service quality study of other sector public utilities needs to be carried out for benchmarking customer satisfaction index in developing countries for monitoring purposes as well.

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Appendices

Appendix 1: Daily Fieldwork Activity Diary

Appendix 1a: Daily Activity Diary at FCTWB (24/02/09-03/06/09)

Date	Contact	Designation	Activity & Documents Collected
24/02/09	Engr. J. Ibrahim	Director/CEO FCTWB	Permission to interview Staff & Access Official Documents
24/02/09	Engr. M. Shuaibu	H O D (Distribution) FCTWB	Introduction to H O D's
24/02/09	Engr. M. Shuaibu	H O D (Distribution)	Introduction to Customer Care Unit
26/02/09	Mrs J. Ameh	H O U (Customer Care)	Interview & Collection of FCTWB Customer Charter
02/03/09	Ms L. Adamu	Customer Care Officer (H/O)	Interview
02/03/09	Mrs M. Edafe	SERVICOM Officer (H/O)	Interview & SERVICOM Booklet.
02/03/09	Engr. M. Shuaibu	H O D (Distribution)	Interview & Collection of FCT & Abuja City Geographical Map.
05/03/09	Mr T. Concern	Reconciliation Officer (H/O)	Interview
06/03/09	Mrs O. Esike	Customer Care Officer (H/O)	Interview
09/03/09-13/03/09	Mrs J. Ameh	H O U (Customer Care)	To Arrange Visits to Area Offices
16/03/09	Mr H. Bello	H O D (Commercial)	Interview, Collection of Tariff Policy & Revue Profile
18/03/09	Mr R. Suleiman	Area Manager (Asokoro)	Interview
19/03/09	Mr T. Mohammed	Area Manager (Gudu)	Interview
19/03/09	Ms F. Aliu	Area Customer Care (Gudu)	Interview
19/03/09	Mr Orji	Area Manager (Garki)	Interview
19/03/09	Mr A. B. Umar	Area Manager (Jabi)	Interview
19/03/09	Mrs O.Y. Okobi	Area Manager (Wuse)	Interview
20/03/09	Mr S. U. Bunza	Area Manager (Maitama)	Interview
20/03/09	Mr Daniel	Area Customer Care (Maitama)	Interview
20/03/09	Mr M. Shehu	Area Manager (Kubwa)	Interview
20/03/09	Mr T. Adeyemi	Area Manager (Buari)	Interview
21/03/09	Mr I. O. Owolabi	Area Manager (Gwagwalada)	Interview
21/03/09	Mr A U. Sanda	Asst. Area Manager (Gwagwalada)	Interview
21/03/09	FCTWB Customers	Existing Gwagwalada Customers & FCTWB Staff	Observation of Customer Forum
Date	Contact	Designation	Activity & Documents Collected
08/04/09	Mr Adebayo	HOD (Quality Control)	Interview & to Collect Water Quality Test Results
30/04/09	FCTWB Customers	Head Office Customer Care Centre	Observation (Complaints Procedure)
31/04/09	FCTWB Customers	Head Office Customer Care Centre	Observation (Complaints Handling)
04/04/09	FCTWB Customers	Focus Group	Focus Group Discussion.

Appendix 1b: Daily Fieldwork Activity Diary at FMAWR (12-14/03/09).

Date	Contact	Designation	Activity
12/03/09	Engr. B. Ajisegiri	Project Coordinator (NUWSRP) FMAWR	In-depth Interview
12/03/09	Engr. O. D. Suulola	Project Engineer (NUWSRP)	In-depth Interview
14/03/09	Engr. B. Ajisegiri	Coordinator, National Urban Water Sector Reform Program (FMAWR)	Collection of Document & Letter of Introduction to LSWC & CRSWBL

Appendix 1c: Daily Fieldwork Activity Diary at CRSWBL (23-26/03/09).

Date	Contact	Designation	Activity
23/03/209	Engr. E. Etowa	Managing Director/CEO CRSWBL	Introduction & Permission to interview Staff & Access Official Documents
23/03/09	Mr K. Olateju	Assessment Officer (Connection)	Key Informant/ Personal Communication
24/03/09	Mr J. Buchan	General Manager (Operations)	In-depth Interview & Collection of Operational & PPP Management Contract Document.
24/03/09	Engr. Mohammed	Calabar Plant Manager	Observation of Plant/Personal Communication
24/03/09	Mr O. E. Edet	Director of Finance & Accounts	Key Informant Interview & Collection of Financial Statements
24/03/09	Mr D. Animpuye	Director of Customer Services	Key Informant Interview & Collection of Complaint Register
25/03/09	Mrs Maggie	Head of Unit (Customer Care)	Key Informant Interview & Examination of Customer's Data Base
25/03/09	Ms Ikwen	Customer Care Officer	Observation & Key Informant Interview
25/03/09	Ms Blessing	Customer Care Officer	Observation & Key Informant Interview
26/03/09	Mr G. Edward	Distribution Manager	Observation & Key Informant Interview
26/03/09	Engr. E. Etowa	Managing Director/CEO	Key Informant Interview, Collection of Article of Memo & Water Edict, 1975, Company Profile/Organogram & Memorandum and Articles of Association of Cross River State Water Board Limited.
26/03/09	Engr. Timothy	Project Engineer (Project Implementation Unit)	Discussion & Collection of ADB Project Completion Report

Appendix 1d: Daily Fieldwork Activity Diary at LSWC on the 13/05/09.

Date	Contact	Designation	Activity
13/05/09	Engr. S. Halloway	Group Managing Director/CEO	Introduction, Permission to Interview Staff, Collection of Annual Report from 2006 – 2008 & Company Profile.
13/05/09	Engr.B. Adegboye	Project Controller, Project Implementation Unit (PIU)	Personal Communication
13/05/09	Mrs A.K. Aina	Deputy Director (Commercial), Project Implementation Unit	Personal Communication & Collection of Annual Report, Operational & Documents
13/05/09	Mrs Adelaja	Customer Help Desk Officer, (Customer Care Unit) H/O	Observation of complaint Handling Procedure & Inspection of Complaint Register. Personal Communication.

Appendix 2: Water Utility Performance Assessment Check List.

Section 1: Operational Assessment.

A	PRODUCTION (CAPACITY UTILIZATION)	2006	2007	2008
1.	Number of Water Schemes			
2.	Number of Surface Water Schemes			
3.	Number of Underground Water Schemes			
4.	Total Number of Functional Schemes			
5.	Total Installed Capacity of Schemes (m^3)			
6.	Total Volume of Water Produced (m^3)			
7.	Total Volume of Water Sold (m^3)			
B	**WATER MEASUREMENT**			**YES/NO**
1.	Is Filtered Water Measured?			
2.	Is Underground (Clear) Water Tank Metered?			
3.	Are All Reservoir (Surface & Elevation) Outlets Metered?			
4.	Are All Customer Connections Metered?			
C	**WATER CONNECTIONS**	**2006**	**2007**	**2008**
1.	Percentage of Metered Connections? (%)			
2.	Total Number of Domestic Connections?			
3.	Total Number of Commercial Connection?			
4.	Total Number of Institutional Connections?			
5.	Total Number of Stand Post connections?			
6.	Total Number of Water Kiosk Connections?			
7.	Total Number of Water Tankers?			
8.	Total number of Water Connections?			

Section 2: Financial Assessment.

A	REVENUE SOURCES PER ANNUM	2006	2007	2008
1.	From Government (Subvention/Grant)?			
2.	From Water Rates (Billing)			
3	From Bank Loans?			
4.	Other Sources?			
5.	Total			
B	**CASH OPERATING COST**			
1.	Electricity			
2.	Diesel			
3.	Maintenance Cost (Preventive & Repairs)			
4.	Inputs (Chemicals)			
5.	Raw Water Costs			
6.	Labour			
7.	Others			
8.	Total			
C	**ADMINISTRATIVE COSTS**			
1.	Salaries & Wages			
2.	Allowances (Travel & Training)			
3.	Others			
4.	Total			
D	**DEPRECIATION COST**			
1.	Annual Depreciation			
E	**LOAN REPAYMENTS**			
1.	Capital			
2.	Interest			
3.	Other Charges			
F	**BILLING (WATER SALES)**	**2006**	**2007**	**2008**
1.	Domestic			
2.	Commercial			
3.	Institutional			
4.	Stand Pipes			
5.	Water Tankers			
6.	Water Kiosks			
7.	Total			
G	**COLLECTIONS (WATER SALES) OF**			
1.	Domestic			
2.	Commercial			
3.	Institutional			
4.	Stand Pipes			
5.	Water Tanker			
6.	Water Kiosks			
7.	Total			
H	**TARIFF POLICY (PER CUBIC METER)**			
1.	Domestic			
2.	Commercial			
3.	Institutional			
4.	Stand Pipe			
5.	Water Tanker			
6.	Water Kiosk			
I	**STANDARD CHARGES (PER CONNECTION)**			
1.	Domestic			
2.	Commercial			
3.	Institutional			
4.				

Section 3: Customer Service Assessment.

A	CUSTOMER ENUMERATION	2006	2007	2008
1.	Do you have a Customer register (Data base)?			
2.	When was it last updated?			
4.	How often is it updated?			
B	**CUSTOMER CARE**			
1.	Do you have a customer charter? (Sight copy)			
2.	Number of Active customers?			
3.	Number of Area/Customer care offices?			
4.	Number of customer care officers?			
C	**COMPLAINT POLICY**			
1.	Do you have Complaint policy? (Sight copy)			
2.	Complaint Procedure?			
3.	Are all request/complaints Logged?			
4.	What are the types of complaint received?			
5.	Total number of complaints received?			
6.	Total number of complaint acknowledged?			
7.	Total number of complaints resolved?			
8.	Why were the remaining not settled?			
9.	Are the complainants aware that action is being taken?			
D	**PAYMENT DEFAULT**			
1.	How are defaulting customers sanctioned?			
2.	Are notices of disconnection given before disconnection?			
3.	How is notice given?			
4.	What period of notice is given?			
E	**CUSTOMER SATISFACTION FEEDBACK**	**2006**	**2007**	**2008**
1.	Do you regularly get feedback of customer satisfaction?			
2.	How do you get feedback from customers?			
F	**SERVICE QUALITY**			
	Access by scoring each attribute over 10			
1.	RELIABILITY: Delivering consistent water supply accurately			
2.	ASSURANCE: Knowledge and courtesy of employees			
3.	TANGIBLES: State and physical attractiveness of facilities and staff.			
4.	EMPATHY: Giving customers caring and individualised attention			
5.	RESPONSIVENESS: Dealing with customers request/complaint promptly and willingly			

Appendix 2b: Financial Statement of Federal Capital Territory Water Board; Year 2006 to 2008

Financial Year	2003	2004	2005	2006	2007	2008
Revenue Source (Per Annum):						
Government Subvention/Grants	23,029,960	30,409,794	200,000,000	99,318,307	64,746,169	0
Water Rates	395,695,401	565,053,152	567,465,882	660,749,006	660,749,006	1,163,953,039
Bank	220,552	283,665	18,708	0	54,098,374	0
Others	7,618,720	32,568,342	56,881,550	51,038,577	60,656,811	83,799,954
Total Revenue per annum	426,564,633	628,314,953	824,366,140	811,105,890	840,250,360	1,247,752,993
Revenue Collection:						
Total Water Billed	575,571,840	738,550,000	960,000,000	964,000,000	1,196,960,842	2,419,200,000
Total Water Bill Collected	395,695,401	565,053,152	567,465,822	660,749,006	660,749,006	1,163,953,039
Total Outstanding for the Year	179,876,439	173,496,848	392,534,178	303,250,994	536,211,836	1,255,246,961
Operating Costs:						
Materials and Services	194,215,253	203,043,291	118,342,624	231,873,555	200,952,760	244,015,292
Personnel Cost	234,851,389	262,151,935	322,733,346	386,672,990	117,998,395	162,449,771
Administrative Overhead	311,007,650	398,933,898	479,671,100	529,923,436	395,370,526	478,208,420
Total Cash Operating Cost	740,074,292	864,129,124	920,747,070	1,148,469,981	714,321,681	884,673,483
Depreciation	106,310,375	86,970,535	75,631,690	78,321,882	91,711,094	84,081,189
Total Operating Cost	846,384,667	951,099,659	996,378,760	1,226,791,863	806,032,775	968,754,672
Net Income from Operation (Profit/Loss)	-419,820,034	-235,814,171	-96,380,930	-415,685,973	34,217,585	278,998,321

Appendix 2c: Analysis of FCT Water Board Financial Statement ; Year 2006 to 2008

Financial Year	2003	2004	2005	2006	2007	2008
Revenue Ratio:						
Water Rates to Total Revenue	93%	90%	69%	81%	79%	93%
Water Rates to Cash Operating Cost	53%	65%	62%	58%	93%	132%
Collection Efficiency Ratio:						
Total Water Bill Collected to Total Water Billed	69%	77%	59%	69%	55%	48%
Operating Cost Ratio:						
Materials & Services Cost to Total Cash Operating Cost	26%	23%	13%	20%	28%	28%
Personnel Cost to Total Cash Operating Cost	32%	30%	35%	34%	17%	18%
Administrative Overhead to Total Cash Operating Cost	42%	46%	52%	46%	55%	54%
Total Operating Cost	100%	100%	100%	100%	100%	100%

Appendix 3: Sample Transcribed Individual Interview

Appendix 3a: Transcribed Interview with the CEO of FCT Water Board, Abuja.

Date: 3rd June 2009 **Duration:** 0.39.51hrs

Participant ID: DW_D0049

Section A – Background

Interviewer: What are the key challenges that Public Water Utilities face in delivering service to customers?

Respondent: The key challenges being faced by public water utilities include design and human capacity of water schemes, population explosion and revenue generation. The Abuja master plan was designed with a population in mind, but due to population explosion as a result of rural to urban and urban to urban migration between states of the federation due to religious riots and socio-economic problems to improve their standard of living. This has made the design capacity of Federal Capital Territory Water Board (FCTWB) water schemes inadequate. Also the human capacity to run the water schemes to reduce un-accounted for water (UFW) and increased revenue generation.

Interviewer: What comes to your mind when you hear the term service quality?

Respondent: Water supply should meet international quality specification of World Health Organisation (WHO) and Nigerian Institute of Standard Specification. FCTWB water supply has been adjudged as one of the best in Africa.

Interviewer: Do your customers know your water is one of the best in Africa?

Respondent: Yes. Customers have attested to the quality of our supply during customer forums. What they complain about is the quantity of supply.

Interviewer: How then do you assure them that your water is safe for drinking?

Respondent: We have quality control department that works with the laboratory and we also have the urban monitoring, which checks the parameters of supply to ensure that the quality of water is maintained from Lower Usman Dam (treatment works) to the tap. If any incidence of contamination is noticed, that area would be isolated.

Interviewer: Is there any way you can let the public and your customers know that the water is safe for drinking, like displaying or publishing the information on the quality test carried out during monitoring team?.

Respondent: We don't publish, but we have the result with us for anybody doubting the quality of water to see. We also go on air and have customer forum. There was an isolated case in Wuse District where a corroded pipe passed through the sewer chamber and was mixing with water. We found out that when we investigated the complaint.

Interviewer: What are the accomplishments or actions that points to the fact that FCTWB has met the service quality standards (Benchmark) in terms of customer service and product quality?

Respondent: We have customer care unit as you come into the headquarter premises, where all the complaints are laid. We also have the SERVICOM unit where complaints are monitored. That is how we get to know how we are doing with the public. Most of the complaints (about 80%) received are not about quality but on billing (non-reflection of payment or over billing), because of the system we have, when customers pay at the Bank, it takes time to reflect in their bill. Not everybody is educated, when some customers go to the bank to pay, some do not write their names or account number properly. Such monies would go into a suspense account and therefore would not reflect in their bill, but we are addressing that gradually with a new system that would take care of that.

Section B - Barriers to Improved Customer Service.

Interviewer: As the Chief Executive Officer of FCTWB, have you ever had an experience where customers were not happy or satisfied when you could not meet the expectations of customers with services provided?

Respondent: We are lucky we have not experienced total system failure, but as the city keeps developing there would be instances like that. Take for example Gwarimpa estate which is the single largest estate in Africa with over 5,000 housing units was built by federal Housing Authority (FHA) over 14 years with no connection. We refused to connect them because of the sub-standard pipes used. Each time we charge their lines, it results in multiple bursts. Another case in mind was when the overhead bridge along the Airport road was being constructed, there was a major burst and it took us over 24 hours to restore water supply to Games Village. There was low pressure in the mains as a result of the burst. We had to resort to water tanker throughout the night, because the Games Village residents wrote a letter threatening to go to court if water supply was not restored immediately. But because of the remedial action we took supplying water throughout the night probably persuaded them to drop the legal action.

Interviewer: When there is a crisis like that, does it bring out the best in you as the chief executive officer?

Respondent: Any time there is a challenge, you use your managerial skills to manage the situation, but it is difficult to bring out the best out of someone under tension or in crises. If one is given a job, the dedication should have no limit. You really have to monitor to make sure that the public get good services, because if you sit back and think things would be alright, you will be disappointed.

Interviewer: Talking about Customer Forum, I was opportuned to attend one at Gwagwalada and heard a customer suggesting that it should be held quarterly. Don't you think it is a good idea?

Respondent: That is not possible because I have 11 area offices and I go once or twice a month. We rotate it yearly among the area offices, and it comes ones a year.

Interviewer: But you don't have to attend all, you have Area Managers in those areas that can deputise for you?

Respondent: If they don't see me personally don't belief anything can happen. Until they hear that the Director is coming, they would not feel confident that there complaint would be looked into and so would not attend nor talk. They would say one is not serious when you say you want to send someone.

Interviewer: But don't you agree that a regular interaction with customers would build goodwill and create a sense of partnership?

Respondent: The Area Offices are well equipped to do that. They have Area Managers and an assistant, they also have Administrative Officers and so nothing stops them from carrying out their own locally. They have public address system and they know the resident association (consumer groups) and they are the ones who invited them for the customer forums.

Interviewer: How easy is it for customers to make complaints at the Area Offices?

Respondent: Everything we have at the Headquarters here is duplicated at the Area Offices. We are looking at a situation in the future when water would be stable and I would know the number of customers and the quantity of water being sent to each areas, the Area Manager should would have a level of autonomy where he can control votes to repair and maintain the pipes and send the remaining balance to the Headquarters. They should be made accountable.

Interviewer: Is the Board allowed to carry out Operations and Maintenance from the revenue generated?

Respondent: Yes. That's what we have being doing and it has existed, it has not been stopped.

Interviewer: I heard something contrary to that when I interviewed some of your staff, can you confirm or deny it?

Respondent: No. What they are saying is that there is a constitutional interpretation that all revenue generated must go to the consolidated federation account and the public and my staffs likewise are not happy about it. But I have told them to concentrate on doing their job after all, they have not brought any maintenance or repairs claim before me that I have failed to approve as the Director. So why are they bothered that all revenues should go to the consolidated federation account. These are procedural issues and we shall get over it, we should not be afraid of new directives, we have to try it first and if it does not work, that is a different thing entirely. What would be the basis for me to complain to the Minister when I have not even implemented the directives, the Federal Government created this infrastructure and if they say spend so and so amount and remit the balance to the federation account who am I to complain.

Interviewer: Is the revenue generated by the Board sufficient to operate?

Respondent: Yes.

Interviewer: I'm sure your revenue generation has improved because the public perception that water should be free is changing?

Respondent: Yes. People are willing to pay for services. Their attitude to bill payment is changing.

Interviewer: I went to Cross River State Water Board Limited to see if it could be bench marked with FCTWB but some people there still think water should be free?

Respondent: There is no basis to benchmark FCTWB with CRSWBL where a consultant is managing the water works, he collects the revenue and the State Government still pays staff because they cannot pay. But at FCTWB we pay personnel costs, pay for operation and maintenance and overhead costs and still have left over which we remit to the federation account. Between January and March this year, we have saved close to 90 million Naira, which was been remitted to Federal Capital Territory Administration (Area 11). That is what the staff is kicking against so that they can be bringing fictitious claims.

Interviewer: That is the area that needs strengthening (Autonomy)?

Respondent: You can't remove it completely. The FCTA has spent a lot of money in rehabilitating the water schemes and you want nothing remitted back to recover those costs? That is impossible.

Interviewer: How do you expect customers to make complaint to the Board? What sort of complaint policy do you have?

Respondent: We have complaint forms, but we do not have a complaint policy. There should be an open door policy where complaints can be received at any time. I receive complaint here myself and then send it to the appropriate authority.

Interviewer: It is good to have a complaint policy displayed like the SERVICOM customer charter, so that customers would know what steps to take if their complaints are not responded to.

Respondent: It is okay. We have not thought about that.

Section C - Measuring Customer Satisfaction and Utility Performance.

Interviewer: What are the priorities that require improvement in terms of product and service quality?

Respondent: We are currently rehabilitating Lower Usman Dam and also developing new treatment plants. This will enhance the capacity to treat and increase the volume of water supply to the public. We are thinking of training in IT (Information Technology) so that we can be compliant and network with ourselves properly. We should improve on revenue collection and data base so that project accurately our expected revenue and expenditure to eliminate guess work. To meter all network and connections to reduce un-accounted For Water (UFW) and know where water is being lost. I belief in laying a solid foundation for whoever would take over from me would build on.

Interviewer: Are all your clear water tanks (CWT) and reservoirs metered?

Respondent: Only what goes into the treatment plant is currently metered, we are planning to meter all the treated water that goes into the Clear Water Tanks and the pipe network, to monitor leakages and illegal connections on the main lines.

Part 2 – Customer Service Quality Assessment

Interviewer: Can you evaluate the quality of service you provide to customers based on the SERQUAL (RATER) attributes of reliability, assurance, tangibles, empathy and responsiveness?

Respondent: Reliability: - We still ration water in the satellite towns like Karu/Nyaya, Gwagwalada and some areas in the city with high terrain like Asokoro. I will score reliability (8/10).

Assurance: - Some few bad eggs among the frontline staff, like plumbers and technicians do not inspire trust because of the illegal connection/disconnections, they are however not disrespectful but deceitful. Because we still do not have an Act or edict giving us a legal backing to function as an entity, we are still tied to the civil service grade and salary structure, this has contributed to low morale within the work force. It has been difficult motivating staff to bring out the best in them and retain good and honest hands. As a service oriented organisation, we work round the clock to ensure that water is delivered continuously to the public. Again because of the culture, the least educated ones with low income have large families (with 2 wives and about 8 – 10 children) to take care of, they result in illegal means of generating income. I would score assurance (7/10).

Tangible: – Because the office space is not adequate and befitting. We look forward to when we can have our own building. I would score the physical structures and equipment's (5/10).

Empathy: – The caring and individualised attention to customers is limited to listening to customers with genuine complain and often waive bills based on the Directors discretion. I will score the Board (3/10).

Responsiveness: – Because it takes time for payments to be reflected on customer's bill, I will score the Board (8/10).

Interviewer: Why does it take so much time for payments to reflect on customer's bill?

Respondent: Very few staff can assess customers account to prevent fraud, it depends on the calibre of staff, and this is deliberate.

Interviewer: How would you rank all these attributes in terms of priority?

Attribute	Performance Score over 10	Ranking in terms of Priority
Reliability	8/10	1st
Assurance	7/10	3rd
Tangibles	5/10	4th
Empathy	3/10	5th
Responsiveness	8/10	2nd

Thank you very much sir for your time.

Appendix 3b: Transcribed Interview with Policy Maker (Coordinator, National Urban Water Sector Reform Programme), Federal Ministry of Agriculture and Water Resources, Abuja.

Date: 3rd June 2009 **Duration:** 0.40.11hrs

Participant ID: DW_A0032

Interviewer: Can you explain what the National Urban Water Sector Reform Programme is all about?

Respondent: Nation Urban Water Sector Reform Programme (NUWSRP) is a follow up to the National Water Rehabilitation Programme (NWRP) which ended in 2000. The difference between NUWSRP and NWRP is that the later was just to rehabilitate the existing water schemes across the states of the federation back to their original or design capacities without looking into the soft components (Institutions). While NUWSRP is not only looking at the conditions of the systems, but rehabilitating and expanding them to meet the current water demand and the institutions set up responsible for building capacity. Are they properly organised to perform the general oversight they are supposed to provide?

Interviewer: What kind of reform is being carried out in the water sector?

Respondent: The reform is being carried out in three fronts, it involves three components namely:-

1. Institutional Reform: - We encourage the states to unbundle their operations, such that service delivery provision would be separated into operation, regulation and capital investment. We want to achieve a scenario where Asset Holders would be State Governments; Service providers would be the current State Water Agencies and a new regulatory Agency to be established.
2. Capacity Reform: - We encourage those that are trainable to come up with a training programme, so that they can be more efficient with what they are doing.
3. Commercial Reform: - We help them come out with a financial model that forms the bases of most institutions.

Interviewer: Should we then classify the commercial reform as market reform?

Respondent: Yes, so that they should be more customer focussed i.e. like the establishment of customer care desks, where customers can complain and be processed. This will ensure that customers are satisfied.

Interviewer: Is there any other reform other than the NUWSRP?

Respondent: Everything has been included in the NUWSRP.

Interviewer: Are there milestones for measuring the successes of the NUWSRP?

Respondent: We developed what is termed as Result Measurement Framework (RMF). To help us know how many new connection have been made, how many have trained, improvement in their cash ratio to reduce subvention from State Governments, if regulating agency has been set up and service provision – water schemes should be working not below 80 % at all times.

Interviewer: How many State water Agencies have moved towards achieving what the NUWSRP aims to achieve or have satisfied the requirements?

Respondent: Out of the five States that are participating in the reform programme, Cross River and Kaduna States are under PPP management contract. While Cross River State up till only has Calabar town under management contract, Kaduna State has two urban towns (Kaduna and Zaria) under management contract.

Interviewer: Everyone is now using Cross River State success story as a case study, will information and be made available as Cross River State Water Board limited which is now on line?

Respondent: That is courtesy of the private operator.

Interviewer: Which Water Utility in Nigeria can you say has successfully or is moving towards complete reform?

Respondent: Lagos is moving and Ogun State is also trying to move towards unbundling their water service provision.

Interviewer: Can I have a document to show how far they have moved, so that I can visit the States to see for myself and collect data to back up the claim through benchmarking?

Respondent: This is a good question, in the sense that it will make me prepare a template of the reform to help see where every state is in terms of legislation, establishment of regulatory agency and policy development etc.

Interviewer: It looks like customer service indicator is not been used in measuring Utility performance?

Respondent: It is not being used at all, because that aspect has not been fully developed.

Interviewer: One cannot talk about service quality without mentioning or relating it to the attributes (reliability, assurance, tangibles, empathy and access) developed for measuring service quality in developed countries. What should be the attributes that can be used here in Nigeria or developing countries?

Respondent: Those attributes can be used in developing countries as well with modifications or else the standard would be too high. Reliability is a very important attribute that cannot be absent.

Interviewer: If customers are not satisfied with the service provided, how can they react or voice out their dissatisfaction?

Respondent: That is why we are talking about Utilities having customer care or help desk where customers can express their concern or dissatisfaction. It should be well publicised, you can either call or go there in person. Also, customer surveys are carried out by independent bodies such as civil society organisations (CSO) or civil society groups.

Interviewer: People tend to shy away from complaining in developing counties, why is it so?

Respondent: It is part of our cultural heritage not to be seen as confrontational or rocking the boat in this part of the world. We tend to have respect for elders and constituted authorities in developing countries.

Interviewer: How can we develop the culture of customers voicing out their dissatisfaction when not happy with services rendered by Public Utilities?

Respondent: By encouragement and motivating the customers to voice out their feelings, probably through non-disclosure of individual identities of complainants.

Interviewer: When we talk about customers, there are both internal and external customers, but let us limit our discussion to external customers.

Respondent: Yes, if customers are to seek redress or solve their complaint their identity or address has to be disclosed.

Thank you very much for your time and for having me

Appendix 3c: Transcribed Interview with Key Informant (Water Engineer, National Urban Water Sector Reform Programme), Federal Ministry of Agriculture and Water Resources, Abuja.

Date: 3rd June 2009 **Duration:** 0.08.43hrs

Participant ID DW_A0040

Interviewer: Cross River State Water Board Limited (CRSWBL) is the first State Water Agency (SWA) in Nigeria to have embraced public utility reform. As a key participant in the National Urban Water Sector Reform Programme (NUWSRP), what form of partnership arrangement is in place there?

Respondent: CRSWBL has not been completely unbundled in the sense that it has not been completely separated into an operator, asset owner and regulator. I cannot say that has been the case in CRSWBL.

Interviewer: Can you explain further what you mean by that?

Respondent: You will need to visit CRSWBL to see for yourself to understand what I'm talking about. When you get there, try and open up the organogram. Unfortunately, their organogram which should tell you how they interface with each other is not very clear; you can then compare what obtains in CRSWB with what exists in other SWA in Nigeria.

Interviewer: I understand from the Interview with (ID DW_A0032) that Kaduna State Water Board has entered into a PPP arrangement with Private Partner?

Respondent: Yes. The process of appointing private partners has not been transparent and questionable and any attempt to subject it to academic scrutiny is usually resisted.

Interviewer: Why is it very difficult in Nigeria to have access to information about Public Utility operations in Nigeria?

Respondent: There shouldn't be any information that cannot be given to the public, especially for research purposes. There are two ways to it. Civil servants are made to sign an oath of secrecy, and when an agreement is entered into with consultants, there is a clause in the consultancy agreement that forbids the release of information to anybody.

Interviewer: I'm sure that applies during the tender process.

Respondent: You are not authorised to even make the finished product of your services available to the public. It is a serious thing.

Interviewer: Can you show me the clause?

Respondent: It is available.

Interviewer: But recently, there was a reform roadmap workshop on "where we are, and where we are going"?

Respondent: There are two types of information. There is one that is a road map of the Government that can be published on the web. But information that is being produced, which is a means to an end, and not an end itself, because it is not yet a finished product and still subject to policy debate should not be published.

Interviewer: Are you aware that in Britain, even an official letter to the Department of Trade and Industry (DTI) pertaining to the dissolution of OFWAT, the water regulatory body was published on the web?

Respondent: Is that so? That is serious.

Thank you so much for your time

Appendix 4: Sample of Transcribed Customer Forum/Focus Group Discussion.

Appendix 4a: FCT Water Board, Gwagwalada Service Area Customer Forum.

Date: 21st March 2009 (10.30am) **Venue:** Town Hall, Gwagwalada, FCT.

	Issues Raised by Customers	**Response/Action by FCTWB**
1.	• In phase three, water used to be supplied 3 times a week, but now it comes once a week and for only two hours. • Customers' wants to know if there is any motivation for customers whose account has a credit balance. • Customer also wants to know the basis of billing customers, when water has not been received for the past three months? • Customers' are ready to pay, as long as they receive water. • Customer informed the FCTWB director that when water was connected to their premises, a meter was installed, but when the bills started coming, they were being billed on flat monthly rate as against the metered consumption. They complained several times until the bill accumulated to about N500, 000.00 (£2,000 equivalent).	• Continuous supply of water not possible • Water is being rationing between areas (zones) six hourly in alternate days • Water tankers would be made available to supplement inadequate potable water supply. • Less than 30% of connected customers pay their water bills.
2.	• Customers' suggested installation of pre-paid meters, where you consume what you pay for, to solve the inaccurate billing issue which has become endemic. • Inspection chambers are normally filled up with grey water along water lines that can seep into main line the back siphon.	• Developing countries generally face the problem of temporary structure, mostly in the peri-urban areas and unplanned developments where pre-paid meter would not be suitable and costly.
3.	• Customers want to know why water is not supplied at a preferred and convenient time, when they would not be asleep or are at work so that they can store water to eliminate the issue of issuing bill to customers when water is not consumed. • Customers want to know why an educational institution was classified under commercial. • Customers' want the high cost of water connection fees to be addressed.	• The problem or high cost of connection is as a result of inadequate water line reticulation. The no of pipes required to connect from where the mains to the customers normally determine the cost of connection.
4.	• Bill computation is contestable due to inaccurate and unrealistic figures. • Bill will be paid promptly if water is supplied. • New tenants inherited a bill of N50, 000(£2,000 equivalent) left behind by an old tenant. • Customers want negotiated bill settlement to encourage customers to liquidate all outstanding bills accumulated by old tenants. • Suggestion that customers want customer care units empowered to handle complaints by decentralised them to enable service areas deal with complaints regarding each service areas to remove administrative bottlenecks. • Suggestion that complaints registers should be opened where complaints can be registered and monitored to avoid repeated letters of follow up. • Suggestion that Customer Forums should be held quarterly	• Inaccurate bills will be looked into if brought to the FCTWB notice. • Customers were advised to investigate if there are debts on any property before signing a lease agreement to avoid inherited debts. • It is not possible to conduct customers' forum quarterly in all the service areas

Appendix 4b: Letter of Invitation to Participate in the FCTWB Focus Group Discussion.

27th March 2009

No 12, Emeka Anyaoku Street

Area 11

P.O. Box 11743, Garki

Abuja, FCT.

Dear Sir/Madam,

THE FCT WATER BOARD CUSTOMER FOCUS GROUP DISCUSSION:

INVITATION TO PARTICIPATE.

The Water Engineering and Development (WEDC), Loughborough University in the United Kingdom is conducting a focus group discussion in conjunction with FCT Water Board Abuja, concerning the service quality and customer satisfaction of water supply in your neighborhood.

The information gathered would be used to identify your needs and priorities in order to suggest ways that water supply services could be improved in the future. While the general conclusions of the study may be used to help formulate policy recommendations, all the specific information you provide will be treated confidentially. We hope you will be willing to participate.

The Customer Focus Group will hold as follows:

Date: **Saturday, 4th April, 2009**

Time: **4 pm Prompt.**

Venue: **A'Avison Hotel (Opposite Sharon Ultimate Hotel),**

Plot 456, Kontagora Close, Off Jos Street, Area 3, Garki, Abuja.

Thank you.

Appendix 4c: FCTWB Customer Focus Group Agenda.

FCTWB, Customer Focus Group Agenda

VENUE: A'AVISON HOTEL, AREA 3, GARKI, ABUJA.

Date: 4th April 2009

Start: 4.00 pm. **Finish: 6.00 pm**

4.00-4.05pm:

Welcome and brief introduction by the coordinator.

4.05-4.30pm

Part A:

1. Background
2. Sharing Customer Experience

Part B:

1. Identifying Customers' Requirements
2. Prioritising Customers' Requirements

5.00-5.15pm

3. Refreshment Break

5.15-6.00pm

Part C:

1. Assessing Service Quality of FCTWB
2. Synthesis and Wrap-up
3. Closing Remark

Appendix 4d: Transcribed FCT Water Board Abuja, Customer Focus Group Discussion.

Participants: Selected at random from the 10 FCT water Board Service Areas.

Date: 4th April 2009 **Time:** 4.00 pm

Venue: A'avison Hotel, Area 3, Garki, Abuja. **ID:** DW_C0048

Moderator: It is often nice to introduce each other very well so that the whole exercise can be less formal. I will like everyone to introduce themselves?

Participant: Participants introduce themselves by stating their names, occupation and the area the come live.

Moderator: The issue of water is no more a local issue and the United Nations in the past nine years has organised conferences on sustainable development. As part of a PhD research, it is essential to assess the service quality of urban water service providers, through the customers' perspective. Water is being accorded a serious prominence all over the world, because governance, institutions and infrastructure plays a role in the development of any nation; much cannot be achieved unless the institutions are customer focussed. Water services are being provided without taking into consideration the needs of the consumers (customers). The only way to ensure that services are sustainable is for it to meet the needs of the customers. For this discussion to be more participatory, contributions on water supply in general is encouraged.

1st Respondent: When I was a kid in the 60s' and 70s', water was supplied to the whole ISHAN land twenty four hours a day; and the source of this water was a small stream. All they did was to pump water from the stream to overhead water tanks on higher ground in various part of the community with the aid of a generator and water is then released by gravity from the overhead tanks to the community. The overhead tanks still exist today, but water does not flow from the overhead tanks; buying of water from water vendors is a thing of the day, although the population is slightly higher today, a projection to take care of the current population was not done. The facilities (infrastructure) that were installed in the sixties to provide water then is what still exists today.

Moderator: In addition to what the last speaker has said, it looks like our leaders lack planning and maintenance culture in the country as a whole.

2nd Respondent: The rural areas are being neglected in favour of water supply to the urban areas. Our leaders are not sincere and don't pay particular attention to the needs of the people.

3rd Respondent: There are water tanks everywhere without water flowing. Boreholes are being sunk individually by everybody that can afford it, which is a sign of infrastructure collapse. Even the cities, the situation is not different.

Moderator: Alright. Assuming an investor is coming to take over the operation of FCT Water Board FCTWB), what the important requirements that you would put across to them? Summary of requirements translated into a statement of need and listed on the flip chart are:

Respondents: (1) Constant (reliable) Water Supply 24hrs/7days a week; (2) Portability (quality) of water supply (i.e. taste, colour and smell); (3) Adequate water pressure to get to high rise buildings; (4) Adequate water pressure 24/7; (5) Notice of Disconnection; (6) Adequate notice before disconnection; (7) Affordable tariff; (8) Disconnection without damages to pipes; (9) Disconnecting individuals customers owing rather than groups in multi-tenancy dwellings; (10) Provision of individual meters; (11) Accuracy of billing system; (12) Prompt repairs of pipe burst and service provider bearing the costs; (13) Quality assurance (third party regulation); (14) Dealing with motivated staff; (15) Staff to be knowledgeable /professional; (16) Prompt responsive to customer's needs and complaints; (17) Constant information dissemination to customers; (18) Flexible meter/ connection fee i.e. instalment payments.

Moderator: In the order of importance, score each of the listed requirements on the piece of paper that would be given to you on a scale of 1 – 10; 1 being the list important and 10 being the most important to you.

Respondents: Were each given a piece of paper and pen to write.

Moderator: Does the FCTWB have a feedback mechanism for capturing customers' voice and is it effective?

Respondents: Yes, but not strong. Customer forum have just been organized for the first time in some places and all the complaints and suggestions made are yet to be carried out. Adequate publicity should be given before it takes place.

It is not effective unlike the consumer parliament in the telecommunication sector, where action is taken and feedback given to consumers on issues discussed. The date for the next

customer forum is not even given and information about FCTWB activities are not publicised. They probably need professionals to run it. Also, because water utilities are self-regulatory, they are at liberty to implement feedback or discard them. There is no independent body to enforce it.

Moderator: Should water supply be free to every one or the operation and maintenance cost be borne by customers?

Respondent: Water supply should not be free. It should be paid for by customers, but the water rates charged should be commensurate to the quality of service provided.

Appreciation and closing remark

Appendix 4e: Sample FCTWB Customer Focus Attendance Sheet.

FCT Water Board Focus Group Participant Attendance Sheet:

Date: 4th April 2009

Start: 4

Finish:

Duration:

No in attendance:

S/No	Name	Educational Qualification.	Profession	Gender
1.	Col O.O. I	M.A. History	Military	M
2.	Mr M.O. O	HND Acct	Civil Servant	M
3.	Mrs O.T. B	LLB (BL)	Legal Practitioner	F
4.	Mr S.N. O	B.Sc. (Hons)	Civil Servant	M
5.	Mr I.T. H	M.A., PG Dip.	Administrator	M
6.	Mr K. A	B.A. Hons	Public. Relations	M
7.	Mr B. O	B.A. Hons	Business Man	M
8.	Mrs M.O E	B.Sc. PG Dip.	Civil Servant	F
9.	Mrs A. A	MBA	Accountant	F
10.	Mrs J.O. A	B.ED (Edu)	Civil Servant	F
	Observer:			
11.	Mr V. O. Ojo	MSc.	Research Scholar	M
	Facilitator:			
12.	Engr O.O. Suulola	BSc (Hons)	Water Engineer	M

Appendix 4f: FCT Water Board Customer Focus Service Quality Requirement (Expectation).

Focus Group Service Quality Requirements (Expectation)

Important Requirements		**Service Quality Attributes**
Reliability	Reliability	• Continuous water supply • Time of supply (when promised) • Consistency of supply
Responsiveness	Billing	• Accuracy in meter reading/billings • Regular meter reading/bill delivery • Reflection of payments
Tangible	Pressure	• Adequate pressure to high rise buildings • Constant pressure at all times
	Colour	• Physical appearance • Particle free
	Taste	• Taste free • Odour less
Assurance	Relevant Knowledge	• Disconnecting without damage to pipes • Disconnecting only customers owing rather than groups in multi-tenancy dwellings • Prompt repairs of burst pipes and service provider bearing the costs • Staff exhibiting professionalism in carrying out duties
Empathy	Helpfulness	• Affordable Tariff • Responding promptly to customer's needs/complaints • Constant dissemination of information to customers • Provision of individual meters • Flexible meter/connection fee payment terms (instalment) • Dealing with motivated staff
	Courtesy	• Notice before any disconnection • Notice should be adequate

Appendix 4g: FCT Water Board Customer Focus Service Quality Requirement (Perception).

Focus Group Service Quality Requirements (Perception)

Important Requirements		**Service Quality Attributes**
Reliability	Reliability	• Continuous water supply • Time of supply (when promised) • Consistency of supply
Responsiveness	Billing	• Accuracy in meter reading/billings • Regular meter reading/bill delivery • Reflection of payments
Tangible	Pressure	• Adequate pressure to high rise buildings • Constant pressure at all times
	Colour	• Physical appearance • Particle free
	Taste	• Taste free • Odour less
Assurance	Relevant Knowledge	• Disconnecting without damage to pipes • Disconnecting only customers owing rather than groups in multi-tenancy dwellings • Prompt repairs of burst pipes and service provider bearing the costs • Staff exhibiting professionalism in carrying out duties
Empathy	Helpfulness	• Affordable Tariff • Responding promptly to customer's needs/complaints • Constant dissemination of information to customers • Provision of individual meters • Flexible meter/connection fee payment terms (instalment) • Dealing with motivated staff
	Courtesy	• Notice before any disconnection • Notice should be adequate

Appendix 5: Pre-test Customer Service Quality Survey.

Appendix 5a: Sample Customer Service Quality Questionnaire.

Dear Friend/Colleague,

Thank you for agreeing to participate in this test survey. This questionnaire is being pre-tested for administration to public water utility customers in Nigeria. You have been chosen based on your customer service experience as a public utility customer in Nigeria. Please answer the questions as if you are a utility customer and kindly return back to the undersigned in the envelope provided, with your feedback at the back of the questionnaire. Please take note of the time spent in answering each section, the clarity of instructions, relevance of questions, and any ambiguity noticed. This would help refine the questionnaire before pilot testing in the field.

Thanking you in anticipation of your cooperation in this regard.

Sincerely yours,

Victor Ojo

(WEDC) Department of Civil and Building Engineering

Loughborough University

PART 1: EXPECTATION

Instructions for filling the questions: - Based on your experience as a customer of water utility company, Please think about the kind of public water utility that would deliver excellent quality of water supply. Think about the water company that you would be pleased with to do business with. Please show the extent to which you think such a company would possess the feature described by each statement. If you feel the a feature is not essential for an excellent water company like the one you have in mind, tick box 1; and if you think a feature is absolutely essential for the excellent water company you have in mind, tick box 7. If you feel less strong about it, tick the number in the middle. There are no right or wrong answers, all we are interested is a number that truly reflects your feelings regarding the water company that would deliver excellent quality of service. Each of the statements is accompanied by a 7 point scale from 'Strongly Disagree' = 1 and 'Strongly agree' = 7.

Note*: Intermediate scale points will not be labelled. Also headings i.e. 'Tangibles will not be included in the final questionnaire.*

Tangibles

1. Excellent water companies will have modern looking equipment's.
2. The physical facilities of excellent water companies would be visually appealing
3. Employees of excellent water companies would be neat in appearance.
4. Materials associated with the service (such as mission statements, pamphlets etc.) will be visually appealing in the excellent water company.

Reliability

1. When excellent water companies promise to do something by a certain time, they would do it.
2. When customers have a problem, excellent water companies will show sincere interest in solving it.
3. Excellent water companies will perform the service rightly, the first time.
4. Excellent water companies will provide their services at the time they promised.
5. Excellent water companies will insist on error-free records.

Responsiveness

1. Employees of excellent water companies will tell customers exactly when services will be performed or disrupted for maintenance.
2. Employees of excellent companies would give prompt service to customers.
3. Employees of excellent companies would always be willing to help customers.
4. Employees of excellent water companies would never be too busy to respond to customer's request.

Assurance

1. The behaviour of employees of excellent water companies will instil confidence in customers.
2. Customers of excellent water companies will feel secure in their transactions.
3. Employees of excellent water companies will be consistently courteous with customers.
4. Employees of water companies will have the knowledge to answer customers' questions.

Empathy

1. Excellent water companies will give customers individual attention
2. Excellent water companies will have operating hours that will be convenient to all their customers.
3. Excellent water companies will have employees who give customers personal attention.
4. Excellent water companies will have the customer's best interest at heart.
5. The employees of excellent water companies will understand the specific needs of their customers.

PART 2: PERCEPTION

Instructions for filling the questions: - The following sets of statements relates to your feelings about XYZ water company services. For each statement, please show the extent to which you believe company XYZ has the feature describe by the statement. Once again, ticking box "1" means that you "Strongly Disagree" that company XYZ has that feature and ticking box "7" means that you "Strongly Agree". You may tick any of the numbers in the middle that shows how strong your feelings are. There are no right or wrong answers. All we are interested in, is the number that best shows your perception about XYZ services.

Tangibles

1. XZY Water Company has modern looking equipment's.
2. XYZ physical facilities are visually appealing
3. XZY employees are neat in appearance.
4. Materials associated with the service (such as mission statements, pamphlets etc.) are appealing in XYZ water company.

Reliability

1. When XYZ water company promise to do something by a certain time, they do it.
2. When customers have a problem, XYZ water company shows sincere interest in solving it.
3. XYZ Water Company performed the service rightly, the first time.
4. XYZ Water Company provides their services at the time they promised.
5. XYZ water companies insist on error-free records.

Responsiveness

1. Employees of XYZ Water Company tell customers exactly when services will be performed or disrupted for maintenance.
2. Employees of XYZ Water Company gives prompt service to customers.
3. Employees of XYZ Water Company are always willing to help customers.

4. Employees of XYZ Water Company are never too busy to respond to customer's request.

Assurance

1. The behaviour of employees of XYZ Water Company instils confidence in customers.
2. Customers of XYZ Water Company feel secure in their transactions.
3. Employees of XYZ Water Company are consistently courteous with customers.
4. Employees of XYZ Water Company have the knowledge to answer customers' questions.

Empathy

1. XYZ water company gives customers individual attention
2. XYZ Water Company has operating hours that is convenient to all their customers.
3. XYZ Water Company has employees who give customers personal attention.
4. XYZ Water Company has their customer's best interest at heart.
5. The employee of XYZ Water Company understands the specific needs of their customers.

POINT ALLOCATION QUESTIONS for IDENTIFYING SERVICE PRIORITIES.

Instructions: - Listed below are five features pertaining to XYZ Water Company and the service they offer. We would like to know how important each of these features is to you when you evaluate XYZ quality of water supply service. Please allocate a total of 100 points among the five features according to how important each feature is to you. The more important a feature, the more points you should allocate to it. Please ensure that the points you allocate to the five features, add up to 100.

1. The appearance of XYZ water company's physical facilities, equipment, personnel and communication materials. …… Points.
2. The ability of XYZ to perform the promised service dependably and accurately. …….. Points.
3. The willingness of XYZ Water Company to help customers, and to provide prompt service. …… Points.
4. The knowledge and courtesy of XYZ water company staff; their ability to inspire trust and confidence. …….. Points.
5. The caring and individualised attention XYZ water company provide to customers. …… Points.
6. Total. ……100 Points

Appendix 5b: Feedback Received from SERVQUAL Instrument Pre-test Survey.

1.	***Ambiguity & Use of Difficult Terms:***	• Terms used in items 1 – 3 are confusing and not relevant as it does not affect performance of a water company. • Clarification of employees in item 14 (frontline staff, customer care, disconnection team etc.).
2.	***Similarity of Questions:***	• Question 3 and 5 on point allocation looks similar.
3.	***Lengthy and complicated Questionnaire:***	• The questionnaire is too lengthy and complicated, requires deep concentration to complete. • Good intentions but lengthy, unless administered by an enumerator.
4.	**Scale not labelled:**	• Scale and intervals used not anchored to numbers and confusing.
5.	**Simplicity of Wordings**	• Simpler wordings should be used
6	**General Comments.**	• While it is appreciated that performance might not be perfect in water supply delivery in developing countries, it is important for customer service and maintenance to be near perfect in order to avoid and correct errors. • Flawless communication between Water Company and customers is very important. • Accuracy in transactions (billing) and promptness in service delivery are also import. • Allow customers to prioritise form a list of service quality attributes those that appeal to them

Appendix 6: Sample Household Service Quality Customer Satisfaction Survey.

SERVICE QUALITY & CUSTOMER SATISFACTION QUESTIONNAIRE

Good morning/afternoon/evening Sir,

My name is ……

Water, Engineering Development Centre (WEDC), Loughborough University in the UK; in conjunction with FCT Water Board, Abuja are conducting a survey concerning the service quality and customer satisfaction of FCT Water Board customers in your neighborhood. The information gathered would be used to identify your priorities and concern in order to suggest ways that the service quality of water supply could be improved in future. All the specific information provided will be treated confidentially. The survey usually takes about 15 minutes to complete. We would value and appreciate your participation and hope that you will be willing to help us with this study.

Note to Enumerators:
Please ask to speak to the head of the household or his spouse. If neither the head nor his or her spouse is present, please write "A" and arrange an alternative visit. Ask the respondent if he or she is willing to be interviewed, and if they refuse to answer any question or does not wish to be interviewed, write "R" by the question or on the questionnaire.

Name of Enumerator: _____

Date of Survey: _____ *Time:* _____

Service Area: _____ *Town/District:* _____

Area/Zone: _____

Street: _____ *Building Serial No:* _____

Type of Dwelling:

Block of Flats □ 1 Semi & Detached Bungalow □ 2 Semi & Detached Duplex □ 3

Mansionnette □4

Classification of Area:

Low Density □ 1 Medium Density □ 2 High Density Area □ 3

Language of Interview:

English □1 Pidgin/Broken English □ 2 Others (Specify) _____

DEMOGRAPHIC DETAILS:

1. Is your house/premises connected to FCT Water Board water mains?

   Yes □ 1 No □ 2

2. What is your position in this building?

   Head of family □ 1 Spouse □ 2 (If Corporate body) Proprietor/M.D □ 3
   Administrator/Secretary □4 Other (state relationship) _____

3. How many people live in your apartment? _____

4. How long have you lived here? _____

5. Gender

   Male □ 1 Female □ 2

6. Which of the following age group do you belong?

   16-24 □ 1 25-34 □ 2 35-44 □ 3 45-54 □ 4 55-64 □ 5 65+ □ 6

7. Which of the following is your highest educational qualification?

   Secondary □ 1 Post Secondary □ 2 Graduate □ 3 Post Graduate □ 4 Others (Specify) _____

8. What is the annual family income?

Below N100,000 □ 1 N101,000 -250,000 □ 2 N251,000 - N500,000 □ 3

N 500,000 - N 1,000,000 □ 4 Above N 1,000,000 □ 5 Don't Know □ 6

WILLINGNESS TO PAY:

1. How often do you get water from FCT Water Board?

24 hours daily □ 1 Daily but not 24 hours □ 2 Every other day □ 3

Twice a week □ 4 Once a week □ 5 Others (specify) _____

2. Which of the following is your main source(s) of water supply?

Water Vendor □ 1 Yard borehole □ 2 Water Board mains □ 3

Mobile Tanker □ 4 Yard well □ 5

3. Which of the following do you use to supplement your main water source?

Water Vendor □ 1 Yard borehole □ 2 Water Board Mains □ 3

Mobile Tanker □ 4 Bottled water □ 5 Yard well □ 6 N/A □7

4. How much do you pay averagely for the supplementary water source in a month?____

5. What do you think about the current water rate compared to other utilities such as electricity and telephone?

Too high □ 1 Normal □ 2 Too low □ 3 Don't know □ 4

6. For an improved and regular supply of potable water from public water mains, will you be willing to pay more?

Yes □ 1 No □ 2

7. What is the maximum price you are willing to pay each month for water supply from public mains? N _____

8. If you are willing to pay more, what should be improved among the following?

Improve reliability □ 1 Improve billing accuracy □ 2 Improve water pressure □ 3

Improve customer service □ 4 Improve communication with customer's □ 5

Training/Employ qualified personnel □ 6 Maintenance □ 7

BILLING:

1. How long have your premises been connected to the public water mains?

Below 6 Months □ 1 6-24 Months □ 2 24-48 Months □ 3

Above 48 Months □ 4 Don't Know □ 5

2. What is the type of connection

Domestic □ 1 Commercial □ 2 Institutional □ 3 Others (Specify) _____

3. Which of the following tariff structure applies to your house/premises?

Metered rate □ 1 Flat rate □ 2

4. Do you receive water bill in this premise? (If receiving water bill omit the next Question)

Yes □ 1 No □ 2

5. Why is this house/premises not billed if not receiving water bill?

New connection □1 Not connected □ 2 Others (State) _____ N/A □ 3

6. How frequently is the water bills delivered?

Monthly □ 1 Quarterly □ 2 Twice a year □ 3 Once a year □ 4

Not being delivered at all □ 5 N/A □ 6

7. Are there any unsettled water bill?

Yes □ 1 No □ 2

8. Why are water bills not settled?

An Inherited bill □ 1 Amount on bill is disputed □ 2 N/A □ 3

Do not enjoy regular supply □ 3 Any other reason (state) _____

9. Was your house/premises ever disconnected from the public water mains?

Yes □ 1 No □ 2

10. Why was it disconnected?

Indebted □1 Wrong disconnection □ 2 inherited bill □ 3 others _____

11. Were you given notice of disconnection before you were disconnected?

Yes □ 1 No □ 2 N/A □ 3

12. Did you complain officially to FCT Water Board?

Yes □ 1 No □ 2 N/A □ 3

13. If you did not complain, what was the reason? _____

14. If you complained, how did you make the complaint?

Telephone □ 1 In person □ 2 Letter □ 3 Others (state) _____ N/A □ 6

COMPLAINT MANAGEMENT:

A. If you recently made enquiries through telephone or in person:

1. How satisfied or dissatisfied were you with:

a. The efficiency and knowledge of the operator or customer care officer?

Very satisfied □ 1 Satisfied □ 2 Neither □ 3 Dissatisfied □ 4

Very Dissatisfied □ 5 N/A □ 6

b. The overall way in which the query was dealt with?

Very satisfied □ 1 Satisfied □ 2 Neither □ 3 Dissatisfied □ 4

Very Dissatisfied □ 5 N/A □ 6

2. Did the operator or customer care officer:

a. Attend to you promptly when you made contact in person?

Yes □ 1 No □ 2 N/A □ 3

b. Advice you of the timescale for dealing with your query/complaint?

Yes □ 1 No □ 2

c. Did you receive a call back within the promised timescale?

Yes □ 1 No □ 2

d. Did you have to repeat the call or visit about this issue?

Yes □ 1 No □ 2

e. If yes, how many times? _____

B. Letter Contact:

Did FCT Water Board:

1. Acknowledge your complaints in writing to inform you that your complaint is being dealt with within a reasonable time?

   Yes □ 1 No □ 2 N/A □ 3

2. Advice how long it will take to resolve the complaint?

   Yes □ 1 No □ 2 N/A □ 3

3. Write or call to tell you that your query has been resolved?

   Yes □ 1 No □ 2 N/A □ 3

4. How long did it take to resolve the problem? _____

5. Advice you of your right to appeal if not satisfied with their decision?

   Yes □ 1 No □ 2 N/A □ 3

6. Provide you with information on how to appeal and how your appeal would be dealt with?

   Yes □ 1 No □ 2 N/A □ 3

C. Visit to your house/premises by FCT Water Board representative

Did the visiting Water Board representative:

1. Inform you when they would be coming?

Yes □ 1 No □ 2 N/A □ 3

2. Arrive punctually at the designated time?

   Yes □ 1 No □ 2 N/A □ 3

3. Have an acceptable appearance for their line of work?

   Yes □ 1 No □ 2 N/A □ 3

4. Have a polite and friendly manner?

   Yes □ 1 No □ 2 N/A □ 3

5. Have the grasp of the situation at hand?

   Yes □ 1 No □ 2 N/A □ 3

6. Fully explain the problem and how it will be resolved?

   Yes □ 1 No □ 2 N/A □ 3

7. Advise you on what had been done before they left?

   Yes □ 1 No □ 2 N/A □ 3

8. Resolve the issue?

   Yes □ 1 No □ 2 N/A □ 3

9. Advice you that a further visit would be required if it was not resolved?

   Yes □ 1 No □ 2 N/A □ 3

IMPORTANCE SCORE:

Please rate the following service quality requirements according to their importance and your priorities on a 10 point scale, where 1 represents ‘not important at all’ and 10 represents ‘extremely important’.

1. Reliable water supply?

1 2 3 4 5 6 7 8 9 10

☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐

2. Adequate water pressure?

1 2 3 4 5 6 7 8 9 10

☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐

3. Taste and smell of drinking water?

1 2 3 4 5 6 7 8 9 10

☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐

4. Accuracy of billing?

1 2 3 4 5 6 7 8 9 10

☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐

5. Physical appearance and colour of drinking water?

1 2 3 4 5 6 7 8 9 10

☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐

6. Relevant knowledge of Staff?

1 2 3 4 5 6 7 8 9 10

☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐

7. Courtesy of staff in dealing with complaints?

1 2 3 4 5 6 7 8 9 10

☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐

8. The helpfulness and interest that the staff showed in you as a valued customer?

1 2 3 4 5 6 7 8 9 10

☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐

CUSTOMER SATISFACTION:

Please rate the following customer satisfaction attributes according to how satisfied you are with the level of service you receive on a 10 point scale, where 1 represents 'Very Dissatisfied' and 10 represents 'Very Satisfied'.

1. Overall, how satisfied or dissatisfied are you with the water supply service you have received?

1 2 3 4 5 6 7 8 9 10

☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐

2. How satisfied or dissatisfied are you with the followings?

a. The reliability of water supply?

1 2 3 4 5 6 7 8 9 10

☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐

b. The colour and appearance of the water supplied?

1 2 3 4 5 6 7 8 9 10

☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐

c. The pressure of the water supplied?

1 2 3 4 5 6 7 8 9 10

☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐

d. The taste and smell of water supplied?

1 2 3 4 5 6 7 8 9 10

□ □ □ □ □ □ □ □ □ □

e. The accuracy of billing?

1 2 3 4 5 6 7 8 9 10

□ □ □ □ □ □ □ □ □ □

f. The relevant knowledge and trust of the staff you dealt with directly?

1 2 3 4 5 6 7 8 9 10

□ □ □ □ □ □ □ □ □ □

g. The courtesy of staff?

1 2 3 4 5 6 7 8 9 10

□ □ □ □ □ □ □ □ □ □

h. The helpfulness and interest that the staff showed in you as a valued customer?

1 2 3 4 5 6 7 8 9 10

□ □ □ □ □ □ □ □ □ □

CUSTOMER LOYALTY:

1. Has your opinion about FCT Water Board now:

Improved □ 1 Unchanged □ 2 Worsened □ 3

2. If given a choice, would FCT Water Board remain your chosen water provider?

Very unlikely □ 1 Not Likely □ 2 Not sure □ 3 Likely □ 4 Very Likely □ 5

3. Would you recommend its service to friends and family?

Very unlikely □ 1 Not Likely □ 2 Not sure □ 3 Likely □ 4 Very Likely □ 5

4. What are your suggestions for an improved and sustainable water supply?

Thank you for participating in this survey

Appendix 7: Survey Coding Sheet.

Section 1: Socio – Economic Characteristics

Q.	Variable Label	Value Label	Value	Measure
1.	Tdwelling	Block of flats. Semi & detached bungalow. Semi & detached duplex. Mansionnete. Others.	1 2 3 4 5	Nominal
2.	classarea	Low density Medium density High density	1 2 3	Nominal
3.	Language	English Broken/Pidgin English Others (Translation)	1 2 3	Nominal
4	Connected	Yes No	Yes No	Nominal
5.	Status in building	Head of family Spouse Proprietor/MD Administrator/Secretary Others	1 2 3 4 5	Nominal
6.	Live(Household Composition)	1-2 people/household 3-4 people/household 5 & above/Household Don't Know/No Response	1 2 3 4	Ordinal
7	Long(lenght of stay in building)	Below 6 months 6-24 months 25-48 months Above 48 months Don't Know/No Response	1 2 3 4 5	Interval
8.	Gender	Male Female	1 2	Nominal
9.	Age group	16-24 25-34 35-44 45-54 55-64 65+	1 2 3 4 5 6	Interval
10.	Educational level	Secondary Post-secondary Graduate Postgraduate Others	1 2 3 4 5	Ordinal
11.	Income (Annual)	100,000 & below 101,000 - 250,000 251,000 - 500,000 501,000-1,000,000 Above 1,000,000 Don't know	1 2 3 4 5 6	Interval

Section 2: Water Supply Characteristics & Willingness to Pay

Q.	Variable Label	Value Label	Value	Measure
1.	Wateroften	24 hours daily Daily but not 24 hours Every other day Twice a week Once a week Others	1 2 3 4 5 6	Ordinal
2.	Watersource	Water vendor Yard borehole Water Board mains Mobile tanker Yard well	1 2 3 4 5	Nominal
3..	Supplement	Water vendor Yard borehole Water Board mains Mobile tanker Bottled water Yard well N/A	1 2 3 4 5 6 7	Nominal
4.	Averagely	Below N2,000 N2,000-N4,000 N4,001-N6,000 N6,001-N8,000 N8,001-N10,000 Above N10,000 Don't Know/No Response	1 2 3 4 5 6 7	Interval
5.	Currentrate	Too high Normal Too low Don't Know/No Response	1 2 3 4	Ordinal

Section 2: Water Supply Characteristics & Willingness to Pay

Q.	Variable Label	Value Label	Value	Measure
6.	Improved	Yes No Don't Know/No Response	1 2 3	Nominal
7.	Maxprice	Below N2,000 N2,000-N4,000 N4,001-N6,000 N6,001-N8,000 N8,001-N10,000 Above N10,000 Don't Know/No Response	1 2 3 4 5 6 7	Interval
8.	Be improved	Reliability Billing accuracy Water pressure Customer service Communication with customers Training/Employment of qualified personnel Regular maintenance All of the above Don't Know/No Response	1 2 3 4 5 6 7 8 9	Nominal

Section 3: Connection & Billing

Q.	Variable Label	Value Label	Value	Measure
1	Howlong	Below 6months 6-24months 24-48months Above 48months Don't know	1 2 3 4 5	Interval
2	Connection	Domestic Commercial Institutional Others	1 2 3 4	Nominal
3	Tariff	Metered rate Flat rate	1 2	Nominal
4	Waterbill	Yes No Don't Know/No Response	1 2 3	Nominal
5	Notbilled	New connection Not connected Others N/A	1 2 3 4	Nominal
6	Frequently	Monthly Quarterly Twice a year Once a year Not receiving bills at all N/A	1 2 3 4 5 6	Ordinal
7	Unsettledbill	Yes No N/A	1 2 3	Nominal
8	Whyunsettled	Inherited bill Amount on bill in is disputed Do not enjoy regular supply Any other reason N/A	1 2 3 4 5	Nominal
9	Disconnected	Yes No Don't Know/No Response	1 2 3	Nominal
10	Whydisconnection	Indebtedness Wrongful disconnection Inherited bill Others N/A	1 2 3 4 5	Nominal

Section 3: Connection & Billing cont.

Q.	Variable Label	Value Label	Value	Measure
11	Notice	Yes No N/A	1 2 3	Nominal
12	Complain	Yes No N/A	1 2 3	Nominal
13	Notcomplain	Too busy Not important About to complain Neighbor already complained Don't have confidence in FCTWB Don't know how to complain Others N/A	1 2 3 4 5 6 7 8	Nominal
14	Howcomplain	Telephone In person Letter Others N/A	1 2 3 4 5	Nominal

Section 4: Complaint Management

Q.	Variable Label	Value Label	Value	Measure
1	Enquiries	Very satisfied Satisfied Neither Dissatisfied Very dissatisfied N/A	1 2 3 4 5 6	Ordinal
2	Querydealt	Very satisfied Satisfied Neither Dissatisfied Very dissatisfied N/A	1 2 3 4 5 6	Ordinal
3	Promply	Yes No N/A	1 2 3	Nominal
4	Advice	Yes No N/A	1 2 3	Nominal
5	Callback	Yes No N/A	1 2 3	Nominal
6	Repeat	Yes No N/A	1 2 3	Nominal
7	Ifyes	Once Twice Several times Don’t know/NA	1 2 3 4	Ordinal
8	Letter	Yes No N/A	1 2 3	Nominal
9	Resolvecomp	Yes No N/A	1 2 3	Nominal
10	Call	Yes No N/A	1 2 3	Nominal
11	Resolveprobl	Less than 1 wk Between 1-2wks Between 2-4wks Between 1-3months Between 3-6months Above 6months N/A	1 2 3 4 5 6 7	Interval
12	Decision	Yes No N/A	1 2 3	Nominal

Section 4: Complaint Management cont.

Q.	Variable Label	Value Label	Value	Measure
13	Provide	Yes No N/A	1 2 3	Nominal
14	Visitpremises	Yes No N/A	1 2 3	Nominal
15	Punctually	Yes No N/A	1 2 3	Nominal
16	Appearance	Yes No N/A	1 2 3	Nominal
17	Polite	Yes No N/A	1 2 3	Nominal
18	Situation	Yes No N/A	1 2 3	Nominal
19	Explain	Yes No N/A	1 2 3	Nominal
20	Advice	Yes No N/A	1 2 3	Nominal
21	Issue	Yes No N/A	1 2 3	Nominal
22	Required	Yes No N/A	1 2 3	Nominal

Section 6: Customer Requirements/Importance

Q.	Variable Label	Value Label	Value	Measure
1	Reliable	Don't know Not important at all Fairly not important at all Not important Fairly not important Neither Fairly important Important Fairly extremely important Extremely important	1 2 3 4 5 6 7 8 9 10	Interval
2	Adequate	Don't know Not important at all Fairly not important at all Not important Fairly not important Neither Fairly important Important Fairly extremely important Extremely important	1 2 3 4 5 6 7 8 9 10	Interval
3	Watersafety	Don't know Not important at all Fairly not important at all Not important Fairly not important Neither Fairly important Important Fairly extremely important Extremely important	1 2 3 4 5 6 7 8 9 10	Interval
4	Accuracybilling	Don't know Not important at all Fairly not important at all Not important Fairly not important Neither Fairly important Important Fairly extremely important Extremely important	1 2 3 4 5 6 7 8 9 10	Interval

Section 6: Customer Requirements/Importance cont.

Q.	Variable Label	Value Label	Value	Measure
5	Physical	Don't know Not important at all Fairly not important at all Not important Fairly not important Neither Fairly important Important Fairly extremely important Extremely important	1 2 3 4 5 6 7 8 9 10	Interval
6	Knowledge	Don't know Not important at all Fairly not important at all Not important Fairly not important Neither Fairly important Important Fairly extremely important Extremely important	1 2 3 4 5 6 7 8 9 10	Interval
7.	Courtesy	Don't know Not important at all Fairly not important at all Not important Fairly not important Neither Fairly important Important Fairly extremely important Extremely important	1 2 3 4 5 6 7 8 9 10	Interval
8	Helpfulness	Don't know Not important at all Fairly not important at all Not important Fairly not important Neither Fairly important Important Fairly extremely important Extremely important	1 2 3 4 5 6 7 8 9 10	Interval

Section 5: Customer Satisfaction

Q.	Variable Label	Value Label	Value	Measure
1	Overall	Very satisfied Satisfied Neither Dissatisfied Very dissatisfied N/A	1 2 3 4 5 6	Ordinal
2	Reliability	Very satisfied Satisfied Neither Dissatisfied Very dissatisfied N/A	1 2 3 4 5 6	Ordinal
3	Pressure	Very satisfied Satisfied Neither Dissatisfied Very dissatisfied N/A	1 2 3 4 5 6	Ordinal
4	Taste	Very satisfied Satisfied Neither Dissatisfied Very dissatisfied N/A	1 2 3 4 5 6	Ordinal
5	Billing	Very satisfied Satisfied Neither Dissatisfied Very dissatisfied N/A	1 2 3 4 5 6	Ordinal
6	Colour	Very satisfied Satisfied Neither Dissatisfied Very dissatisfied N/A	1 2 3 4 5 6	Ordinal
7	Knowledge	Very satisfied Satisfied Neither Dissatisfied Very dissatisfied N/A	1 2 3 4 5 6	Ordinal
8	Courtesy	Very satisfied Satisfied Neither Dissatisfied Very dissatisfied N/A	1 2 3 4 5 6	Ordinal
9	Helpfulness	Very satisfied Satisfied Neither Dissatisfied Very dissatisfied N/A	1 2 3 4 5 6	Ordinal

Section 7: Customer Loyalty

Q.	Variable Label	Value Label	Value	Measure
1	Opinion	Improved Unchanged Not sure	1 2 3	Ordinal
2	Choice	Very likely Likely Not likely Very unlikely Not sure	1 2 3 4 5	Ordinal
3	Recommend	Very likely Likely Not likely Very unlikely Not sure	1 2 3 4 5	Ordinal
4	Suggestions			

Appendix 8: Frequency Tables of Analysis

Appendix 8a: Demographic/ Socio-economic Characteristics

	Characteristics	Frequency (N)	Value Label	Frequency (%)
1	Classification Area	649	Low density	3.7
			Medium density	17.6
			High Density	78.7
2	Dwelling type	649	Block of flats	54.2
			Semi & detached Bungalow	32.5
			Semi & detached duplex	12.9
			Maisonette	0.3
3	Status in building	649	Head of the family	46.4
			Spouse	40.8
			Proprietor/MD	0.9
			Administrator/Secretary	0.6
			Others	11.2
4	Household size	649	1 - 2 people	4.3
			3 - 4 people	31.1
			5 and above	64.6
5	How long lived in bldg	649	Below 6 months	1.8
			6 - 24 months	24.8
			25 - 48 months	25.7
			Above 48 months	47.6
6	Gender	649	Male	55.3
			Female	44.7
7	Age group	649	16 - 24	2.6
			25 - 34	23.3
			35 - 44	43.9
			45 - 54	26.8
			55 - 64	3.2
			65 and above	0.2
8	Educational level	649	Secondary	3.9
			Post-secondary	15.6
			Graduate	64.3
			Post Graduate	14.9
			Others	1.4
9	Annual family income (Nigeria Naira)	649	0 - 100,000	1.7
			101, 000 - 250, 000	18.6
			251, 000 - 500, 000	24.0
			501, 000 - 1, 000, 000	37.3
			Above 1, 000, 000	18.3

Source: Survey Data

Appendix 8b: Water Supply Characteristics

	Characteristics	Frequency (N)	Value Label	Frequency Valid (%)
1	How often do you get water (Reliability)	649	24 hours daily	27.1
			Daily but not 24 hours	33.1
			Every other day	12.8
			twice a week	7.1
			Once a week	8.0
			Others	11.9
2	Main Source of Supply	649	water vendor	3.1
			Yard borehole	5.7
			water board mains	88.4
			Mobile tanker	2.0
			Bottled water	0.8

Source: Survey Data

Appendix 8c: Willingness to Pay Characteristics

	Characteristics	Frequency (N)	Value Label	Frequency Valid (%)
1	Average monthly cost of Supplementary water Source	98	Below 2,000	43.9
			2,001-4,000	29.6
			4,001-6,000	3.1
			6,001-8,000	6.1
			8,001-10,000	3.1
			Above 10,000	14.3
2	Compare current water rate to Electricity & Telephone	598	Too High	47.8
			Normal	51.7
			Too low	0.5
3	Willing to pay more for improved supply?	616	Yes	21.4
			No	78.6
4	Max price willing to pay more for improved supply?	510	Below 2,000	66.7
			2,001-4,000	23.1
			4,001-6,000	7.3
			6,001-8,000	1.8
			8,001-10,000	0.8
			Above 10,000	0.4
5	What to improve if willing to pay more?	457	Improve reliability	9.8
			Improve billing accuracy	2.0
			Improve water quality/pressure	3.7
			Improve customer service	0.4
			Improve communication with customers	2.2
			Training/Employ qualified personnel	3.5
			Maintenance	2.2
			All of the above	76.1

Source: Survey Data

Appendix 8d: Connection & Billing Characteristics

	Characteristics	Frequency (N)	Value Label	Frequency Valid (%)
1	How long been connected to public mains?	499	Below 6 months	0.2
			6-24 months	2.2
			24-48 months	1.4
			Above 48 months	96.2
2	Type of connection?	635	Domestic	97.8
			Commercial	1.9
			Institutional	0.2
			Others	0.2
3	What tariff structure applies to your premises?	635	Metered rate	34.2
			Flat rate	65.8
4	Do receive water bill in this premise?	634	Yes	94.0
			No	6.0
5	Why is premises not billed if not billed?	35	Not connected	2.9
			Others (State)	97.1
6	How often is water bill delivered if billed?	597	Monthly	78.7
			Quarterly	15.1
			Twice a year	1.7
			Once a year	2.0
			Not delivered at all	2.5
7	Are there any unsettled bill?	621	Yes	41.9
			No	58.1
8	Why are billed not settled?	264	An inherited bill	61.0
			Amount on bill is disputed	17.4
			Do not enjoy regular supply	8.7
			Any other reason	12.9
9	Was your house ever disconnected?	633	Yes	28.3
			No	71.7
10	Why was it disconnected?	178	Indebtedness	34.3
			Wrong disconnection	28.1
			Inherited bill	23.0
			Others	14.6
11	Was notice of disconnection given?	204	Yes	26.0
			No	74.0

Source: Survey Data

Appendix 8e: Customer Service (Complaint)

	Characteristics	Frequency (N)	Value Label	Frequency Valid (%)
1	Did you formally complain to FCTWB?	441	Yes	38.8
			No	61.2
2	If you did not complain, why did you not?	201	Too busy to make a complaint	5.0
			Not Important	13.9
			About to make a complaint	3.5
			Neighbour already complained	14.4
			Don't have confidence in FCTWB	19.4
			Don't know how to complain	9.5
			Others	34.3
3	If you complained, how did you complain?	175	Telephone	3.4
			In person	86.3
			Letter	6.3
			Others	4.0

Source: Survey Data

Appendix 8f: Complaint (Telephone Contact)

	Characteristics	Frequency (N)	Value Label	Frequency Valid (%)
1	How satisfied or dissatisfied with the Operator?	155	Very satisfied	12.9
			Satisfied	65.8
			Neither	4.5
			Dissatisfied	16.8
2	The overall way in which query was dealt with?	155	very satisfied	5.2
			Satisfied	36.8
			Neither	7.7
			Dissatisfied	41.9
			Very dissatisfied	8.4
3	Did the customer care officer promptly attended to you?	151	Yes	84.8
			No	15.2
4	Advised of the time scale for dealing with complaints?	152	Yes	28.9
			No	71.1
5	Receive a call back within the time frame?	149	Yes	15.4
			No	84.6
6	Have to repeat the call or visit on the issue?	154	Yes	45.5
			No	54.5
7	If yes, how many times?	76	Once	21.1
			Twice	40.8
			Several times	38.2

Source: Survey Data

Appendix 8g: Complaint (Letter)

	Characteristics	Frequency (N)	Value Label	Frequency Valid (%)
1	Did FCTWB acknowledge your complaint?	51	Yes	9.8
			No	90.2
2	Advised about how long it will take to resolve the complaint?	51	Yes	15.7
			No	84.3
3	Write or call to say the query has been resolved?	51	Yes	5.9
			No	94.1
4	How long did it take to resolve the problem?	35	0-1 week	34.3
			1-2 weeks	14.3
			2-4 weeks	2.9
			4-12 weeks	2.9
			12-24weeks	8.6
			Above 24 weeks	37.1
5	Advice on right of appeal if not satisfied with the decision?	51	Yes	7.8
			No	92.2
6	Provide information on how to appeal and how it will be dealt with?	51	Yes	5.9
			No	94.1

Source: Survey Data

Appendix 8h: Complaint (Visit to Premises)

	Characteristics	Frequency (N)	Value Label	Frequency Valid (%)
1	Informed that FCTWB would be coming?	100	Yes	47.0
			No	53.0
2	Arrive punctually at the designated time?	66	Yes	50.0
			No	50.0
3	Have acceptable appearance for work?	98	Yes	84.7
			No	15.3
4	Have a polite and friendly manner?	99	Yes	89.9
			No	10.1
5	Have the grasp of the situation at hand?	95	Yes	81.1
			No	18.9
6	Fully explain the problem and how it will be solved?	91	Yes	51.6
			No	48.4
7	Advice on what has been done before leaving?	91	Yes	30.8
			No	69.2
8	Resolve the issue?	106	Yes	64.2
			No	35.8
9	Advised that further visits would be required if not resolved?	92	Yes	18.5
			No	81.5

Source: Survey Data

Appendix 8i: Customer Needs and Requirements.

	Characteristics	Frequency (N)	Value Label	Frequency Valid (%)
1	Reliable water supply	649	Unimportant	1.5
			Neither	0.2
			Important	3.9
			Very Important	94.5
2	Adequate pressure	649	Unimportant	0.2
			Neither	0.2
			Important	0.5
			Very Important	99.2
3	Taste and smell (Safety)	649	Very Unimportant	0.5
			Unimportant	0.2
			Important	24.8
			Very Important	74.6
4	Billing accuracy	649	Important	0.8
			Very Important	99.2
5	Physical appearance and colour	649	Very Unimportant	.5
			Unimportant	2.0
			Neither	2.5
			Important	33.9
			Very Important	61.2
6	Knowledge and Trust	649	Very Unimportant	53.6
			Unimportant	38.2
			Neither	8.2
7	Courtesy of Staff	649	Very Unimportant	53.6
			Unimportant	38.2
			Neither	8.2
8	Helpfulness and interest	649	Very Unimportant	53.6
			Unimportant	38.2
			Neither	8.2

Source: Survey Data

Appendix 8j: Satisfaction (Attributes)

	Characteristics	Frequency (N)	Value Label	Frequency Valid (%)
1	Reliability (Continuity) of supply	647	Very Dissatisfied	3.1
			Dissatisfied	20.2
			Neither	4.5
			Satisfied	58.3
			Very Satisfied	13.9
2	Colour and appearance	645	Very Dissatisfied	0.2
			Dissatisfied	3.4
			Neither	3.9
			Satisfied	80.6
			Very Satisfied	11.9
3	Pressure	643	Very Dissatisfied	4.8
			Dissatisfied	14.6
			Neither	6.4
			Satisfied	62.1
			Very Satisfied	12.1
4	Taste and Smell	644	Very Dissatisfied	0.2
			Dissatisfied	2.0
			Neither	3.9
			Satisfied	80.3
			Very Satisfied	13.7
5	Accuracy of billing	588	Very Dissatisfied	8.8
			Dissatisfied	27.2
			Neither	12.2
			Satisfied	44.0
			Very Satisfied	7.7
6	Relevant knowledge and trust of staff	175	Very Dissatisfied	.6
			Dissatisfied	3.4
			Neither	10.9
			Satisfied	76.6
			Very Satisfied	8.6
7	The Courtesy of the Staff	171	Very Dissatisfied	1.8
			Dissatisfied	13.5
			Neither	32.7
			Satisfied	45.6
			Very Satisfied	6.4
8	Helpfulness and interest showed by staff	649	Dissatisfied	2.0
			Satisfied	0.5
			Very Satisfied	97.5

Source: Survey Data

Appendix 8k: Customer Loyalty.

	Characteristics	Frequency (N)	Value Label	Frequency Valid (%)
1	Opinion about FCTWB	649	Improved	53.6
			Unchanged	38.2
			Worsened	8.2
2	Choice to remain FCTWB customer	649	Very likely	23.0
			Likely	58.4
			Not likely	12.0
			Very unlikely	3.2
			Not sure	3.4
3	Choice of recommending FCTWB to friends	649	Very likely	29.1
			Likely	55.9
			Not likely	9.2
			Very unlikely	2.5
			Not sure	3.2

Source: Survey Data

Appendix 9: Contingency Tables

Appendix 9a: Classification by Type of Dwelling

Classification of Area * Type of dwelling Crosstabulation

			Type of dwelling				
			Block of flats	Semi & detached bungalow	Semi & detached duplex	Maisonette	Total
Classification of Area	Low density	Count	0	3	19	2	24
		% within Classification of Area	.0%	12.5%	79.2%	8.3%	100%
		% within Type of dwelling	.0%	1.4%	22.6%	100.0%	3.7%
	Medium density	Count	0	57	57	0	114
		% within Classification of Area	.0%	50.0%	50.0%	.0%	100%
		% within Type of dwelling	.0%	27.0%	67.9%	.0%	17.6 %
	High density	Count	352	151	8	0	511
		% within Classification of Area	68.9%	29.5%	1.6%	.0%	100%
		% within Type of dwelling	100.0%	71.6%	9.5%	.0%	78.7 %
	Total	Count	352	211	84	2	649
		% within Classification of Area	54.2%	32.5%	12.9%	.3%	100%
		% within Type of dwelling	100.0%	100.0%	100.0%	100.0%	100%

Source: Survey Data

Appendix 9b: Classification Area by Annual Family Income

Classification of Area * What is the family annual income? Crosstabulation

			What is the family annual income?					
			0-100,000	101,000-250,000	251,000-500,000	501,000-1000,000	1,000,000 & above	Total
Classification of Area	Low density	Count	0	0	2	8	14	24
		% within Classification of Area	.0%	.0%	8.3%	33.3%	58.3%	100%
		% within What is the family annual income?	.0%	.0%	1.3%	3.3%	11.8%	3.7%
	Medium density	Count	1	20	16	48	29	114
		% within Classification of Area	.9%	17.5%	14.0%	42.1%	25.4%	100%
		% within What is the family annual income?	9.1%	16.5%	10.3%	19.8%	24.4%	17.6%
	High density	Count	10	101	138	186	76	511
		% within Classification of Area	2.0%	19.8%	27.0%	36.4%	14.9%	100%
		% within What is the family annual income?	90.9%	83.5%	88.5%	76.9%	63.9%	78.7%
	Total	Count	11	121	156	242	119	649
		% within Classification of Area	1.7%	18.6%	24.0%	37.3%	18.3%	100%
		% within What is the family annual income?	100.0%	100.0%	100.0%	100.0%	100.0%	100%

Appendix 9c: Type of Dwelling by Annual Family Income

Type of dwelling * What is the family annual income? Crosstabulation

			What is the family annual income?					
			0-100,000	101,000-250,000	251,000-500,000	501,000-1000,000	1,000,000 & above	Total
Type of dwelling	Block of flats	Count	4	83	87	112	66	352
		% within Type of dwelling	1.1%	23.6%	24.7%	31.8%	18.8%	100%
		% within What is the family annual income?	36.4%	68.6%	55.8%	46.3%	55.5%	54.2%
	Semi & detached bungalow	Count	6	36	58	98	13	211
		% within Type of dwelling	2.8%	17.1%	27.5%	46.4%	6.2%	100%
		% within What is the family annual income?	54.5%	29.8%	37.2%	40.5%	10.9%	32.5%
	Semi & detached duplex	Count	1	2	11	31	39	84
		% within Type of dwelling	1.2%	2.4%	13.1%	36.9%	46.4%	100%
		% within What is the family annual income?	9.1%	1.7%	7.1%	12.8%	32.8%	12.9%
	Maisonette	Count	0	0	0	1	1	2
		% within Type of dwelling	.0%	.0%	.0%	50.0%	50.0%	100%
		% within What is the family annual income?	.0%	.0%	.0%	.4%	.8%	.3%
	Total	Count	11	121	156	242	119	649
		% within Type of dwelling	1.7%	18.6%	24.0%	37.3%	18.3%	100%
		% within What is the family annual income?	100.0%	100.0%	100.0%	100.0%	100.0%	100%

Appendix 9d: Gender by Annual Family Income

What is your gender * What is the family annual income? Cross tabulation

			What is the family annual income?					
			0-100,000	101,000-250,000	251,000-500,000	501,000-1000,000	1,000,000 & above	Total
Gender	Male	Count	3	40	100	147	69	359
		% within What is your gender	.8%	11.1%	27.9%	40.9%	19.2%	100%
		% within What is the family annual income?	27.3%	33.1%	64.1%	60.7%	58.0%	55.3 %
	Female	Count	8	81	56	95	50	290
		% within What is your gender	2.8%	27.9%	19.3%	32.8%	17.2%	100%
		% within What is the family annual income?	72.7%	66.9%	35.9%	39.3%	42.0%	44.7 %
	Total	Count	11	121	156	242	119	649
		% within What is your gender	1.7%	18.6%	24.0%	37.3%	18.3%	100%
		% within What is the family annual income?	100.0%	100.0%	100.0%	100.0%	100.0%	100%

Appendix 9e: Age Group by Annual Family Income

Which of the following age group do you belong? * What is the family annual income? Crosstabulation

			What is the family annual income?					
			0-100,000	101,000-250,000	251,000-500,000	501,000-1,000,000	1,000,000 & above	Total
Age Group	16-24	Count	0	0	1	1	15	17
		% within which of the following age group do you belong?	.0%	.0%	5.9%	5.9%	88.2%	100%
		% within What is the family annual income?	.0%	.0%	.6%	.4%	12.6%	2.6%
	25-34	Count	5	61	30	32	23	151
		% within which of the following age group do you belong?	3.3%	40.4%	19.9%	21.2%	15.2%	100%
		% within What is the family annual income?	45.5%	50.4%	19.2%	13.2%	19.3%	23.3%
	35-44	Count	4	48	74	124	35	285
		% within which of the following age group do you belong?	1.4%	16.8%	26.0%	43.5%	12.3%	100%
		% within What is the family annual income?	36.4%	39.7%	47.4%	51.2%	29.4%	43.9%
	45-54	Count	0	10	44	78	42	174
		% within which of the following age group do you belong?	.0%	5.7%	25.3%	44.8%	24.1%	100%
		% within What is the family annual income?	.0%	8.3%	28.2%	32.2%	35.3%	26.8%
	55-64	Count	1	2	7	7	4	21
		% within which of the following age group do you belong?	4.8%	9.5%	33.3%	33.3%	19.0%	100%
		% within What is the family annual income?	9.1%	1.7%	4.5%	2.9%	3.4%	3.2%
	65+	Count	1	0	0	0	0	1
		% within which of the following age group do you belong?	100.0%	.0%	.0%	.0%	.0%	100%
		% within What is the family annual income?	9.1%	.0%	.0%	.0%	.0%	.2%
	Total	Count	11	121	156	242	119	649
		% within which of the following age group do you belong?	1.7%	18.6%	24.0%	37.3%	18.3%	100%
		% within What is the family annual income?	100.0%	100.0%	100.0%	100.0%	100.0%	100%

Appendix 9f: Educational Qualification by Annual Family Income

Which of the following is your highest qualification? * What is the family annual income? Crosstabulation

			What is the family annual income?					
			0-100,000	101,000-250,000	251,000-500,000	501,000-1000,000	1,000,000 & above	Total
Educational Qualification	Secondary	Count	2	4	6	4	9	25
		% within Which of the following is your highest qualification?	8.0%	16.0%	24.0%	16.0%	36.0%	100%
		% within What is the family annual income?	18.2%	3.3%	3.8%	1.7%	7.6%	3.9%
	Post Secondary	Count	4	52	18	10	17	101
		% within Which of the following is your highest qualification?	4.0%	51.5%	17.8%	9.9%	16.8%	100%
		% within What is the family annual income?	36.4%	43.0%	11.5%	4.1%	14.3%	15.6%
	Graduate	Count	3	59	118	157	80	417
		% within Which of the following is your highest qualification?	.7%	14.1%	28.3%	37.6%	19.2%	100%
		% within What is the family annual income?	27.3%	48.8%	75.6%	64.9%	67.2%	64.3%
	Post Graduate	Count	2	4	13	67	11	97
		% within Which of the following is your highest qualification?	2.1%	4.1%	13.4%	69.1%	11.3%	100%
		% within What is the family annual income?	18.2%	3.3%	8.3%	27.7%	9.2%	14.9%
	Others (specify)	Count	0	2	1	4	2	9
		% within Which of the following is your highest qualification?	.0%	22.2%	11.1%	44.4%	22.2%	100%
		% within What is the family annual income?	.0%	1.7%	.6%	1.7%	1.7%	1.4%
	Total	Count	11	121	156	242	119	649
		% within Which of the following is your highest qualification?	1.7%	18.6%	24.0%	37.3%	18.3%	100%
		% within What is the family annual income?	100.0%	100.0%	100.0%	100.0%	100.0%	100%

Appendix 9g: Contingency Table of Service Areas by Overall Satisfaction

Service Area * Overall, how satisfied or dissatisfied are you with the water supply service you have received?

			Overall, how satisfied/dissatisfied are you with the water supply service?					
			Very Dissatisfied	Dissatisfied	Neither	Satisfied	Very Satisfied	Total
Service	Asokoro	Count	0	13	0	9	8	30
Area		% within Service Area	.0%	43.3%	.0%	30.0%	26.7%	100%
	Buari	Count	0	1	0	4	1	6
		% within Service Area	.0%	16.7%	.0%	66.7%	16.7%	100%
	Garki	Count	1	1	3	60	27	92
		% within Service Area	1.1%	1.1%	3.3%	65.2%	29.3%	100%
	Gudu	Count	0	0	0	20	10	30
		% within Service Area	0.0%	0.0%	0.0%	66.7%	33.3%	100%
	Gwagwalada	Count	3	22	4	1	0	30
		% within Service Area	10.0%	73.3%	13.3%	3.3%	.0%	100%
	Jabi	Count	0	1	0	20	13	34
		% within Service Area	.0%	2.9%	.0%	58.8%	38.2%	100%
	Karu	Count	4	17	2	8	3	34
		% within Service Area	11.8%	50.0%	5.9%	23.5%	8.8%	100%
	Kubwa	Count	4	24	5	93	34	160
		% within Service Area	2.5%	15.0%	3.1%	58.1%	21.2%	100%
	Maitama	Count	5	45	3	54	16	123
		% within Service Area	4.1%	36.6%	2.4%	43.9%	13.0%	100%
	Wuse	Count	1	9	6	76	16	108
		% within Service Area	.9%	8.3%	5.6%	70.4%	14.8%	100%
	Total	Count	18	133	23	345	128	647
		% within Service Area	2.8%	20.6%	3.6%	53.3%	19.8%	100%

Appendix 9h: Service Areas Overall Satisfaction by Classification of Area.

Classification of Area * Overall, how satisfied or dissatisfied are you with the water supply service you have received? Cross tabulation

			Overall, how satisfied or dissatisfied are you with the water supply service you have received?					
			Very Dissatisfied	Dissatisfied	Neither	Satisfied	Very Satisfied	Total
Classification of Area	Low Density Area	Count	2	7	0	10	9	28
		% within Classification of Area	7.1%	25.0%	.0%	35.7%	32.1%	100%
	Medium Density Area	Count	16	117	15	265	105	518
		% within Classification of Area	3.1%	22.6%	2.9%	51.2%	20.3%	100%
	High Density Area	Count	0	9	8	70	14	101
		% within Classification of Area	.0%	8.9%	7.9%	69.3%	13.9%	100%
	Total	Count	18	133	23	345	128	647
		% within Classification of Area	2.8%	20.6%	3.6%	53.3%	19.8%	100%

Appendix 9i: Service Area overall Satisfaction by Gender

Service Area * Overall, how satisfied or dissatisfied are you with the water supply service you have received? * What is your gender

What is your gender			Overall, how satisfied or dissatisfied are you with the water supply service you have received?					
			Very Dissatisfied	Dissatisfied	Neither	Satisfied	Very satisfied	Total
Male	Service	Asokoro	0	8	0	3	5	16
	Area	Buari	0	1	0	2	0	3
		Garki	0	0	2	32	17	51
		Gudu	0	0	0	11	6	17
		Gwagwalada	3	14	3	1	0	21
		Jabi	0	0	0	11	9	20
		Karu	3	10	0	7	2	22
		Kubwa	3	12	2	57	25	99
		Maitama	4	27	1	23	9	64
		Wuse	0	5	1	30	8	44
		Total	13	77	9	177	81	357
Female	Service	Asokoro	0	5	0	6	3	14
	Area	Buari	0	0	0	2	1	3
		Garki	1	1	1	28	10	41
		Gudu	0	0	0	9	4	13
		Gwagwalada	0	8	1	0	0	9
		Jabi	0	1	0	9	4	14
		Karu	1	7	2	1	1	12
		Kubwa	1	12	3	36	9	61
		Maitama	1	18	2	31	7	59
		Wuse	1	4	5	46	8	64
		Total	5	56	14	168	47	290

Appendix 9j: Service Area Overall Satisfaction by Age Group

Service Area * Overall, how satisfied or dissatisfied are you with the water supply service you have received? * Which of the following age group do you belong?

Which of the following age group do you belong?			Overall, how satisfied or dissatisfied are you with the Water supply Service you have received? Very Dissatisfied	Dissatisfied	Neither	Satisfied	Very Satisfied	Total
16-24	Service Area	Garki		1	0	7		8
		Gudu		0	0	1		1
		Gwagwalada		1	1	0		2
		Jabi		0	0	1		1
		Maitama		2	0	3		5
		Total		4	1	12		17
25-34	Service Area	Asokoro		3	0	4	1	8
		Buari		0	0	1	0	1
		Garki		0	1	17	2	20
		Gudu		0	0	7	1	8
		Gwagwalada		4	2	0	0	6
		Jabi		0	0	8	1	9
		Karu		2	1	3	0	6
		Kubwa		8	1	15	6	30
		Maitama		12	1	18	2	33
		Wuse		4	0	24	2	30
		Total		33	6	97	15	151
35-44	Service Area	Asokoro	0	2	0	3	4	9
		Buari	0	0	0	2	1	3
		Garki	1	0	2	24	19	46
		Gudu	0	0	0	6	8	14
		Gwagwalada	1	5	1	0	0	7
		Jabi	0	0	0	6	7	13
		Karu	2	10	1	2	1	16
		Kubwa	4	8	3	39	21	75
		Maitama	4	20	2	22	8	56

Appendix 10: Correlation table of Overall and Satisfaction Variables

Appendix 10a: Reliability of water supply by overall

Correlations

		Overall, how satisfied or dissatisfied are you with the water supply service you have received?	The reliability of water supply?
Overall, how satisfied or dissatisfied are you with the water supply service you have received?	Pearson Correlation	1.000	.817**
	Sig. (2-tailed)		.000
	N	617.000	617
The reliability of water supply?	Pearson Correlation	.817**	1.000
	Sig. (2-tailed)	.000	
	N	617	617.000

**. Correlation is significant at the 0.01 level (2-tailed).

Appendix 10b: Colour and appearance by overall

Correlations

		Overall, how satisfied or dissatisfied are you with the water supply service you have received?	The colour and appearance of the water supplied?
Overall, how satisfied or dissatisfied are you with the water supply service you have received?	Pearson Correlation	1.000	.258**
	Sig. (2-tailed)		.000
	N	617.000	615
The colour and appearance of the water supplied?	Pearson Correlation	.258**	1.000
	Sig. (2-tailed)	.000	
	N	615	615.000

**. Correlation is significant at the 0.01 level (2-tailed).

Appendix 10c: Water Pressure by Overall

Correlations

		Overall, how satisfied or dissatisfied are you with the water supply service you have received?	The pressure of the water supplied?
Overall, how satisfied or dissatisfied are you with the water supply service you have received?	Pearson Correlation	1.000	.434**
	Sig. (2-tailed)		.000
	N	617.000	613
The pressure of the water supplied?	Pearson Correlation	.434**	1.000
	Sig. (2-tailed)	.000	
	N	613	613.000

**. Correlation is significant at the 0.01 level (2-tailed).

Appendix 10d: Taste and Smell

Correlations

		Overall, how satisfied or dissatisfied are you with the water supply service you have received?	The taste and smell of water supplied?
Overall, how satisfied or dissatisfied are you with the water supply service you have received?	Pearson Correlation	1.000	.450**
	Sig. (2-tailed)		.000
	N	617.000	614
The taste and smell of water supplied?	Pearson Correlation	.450**	1.000
	Sig. (2-tailed)	.000	
	N	614	614.000

**. Correlation is significant at the 0.01 level (2-tailed).

Appendix 10e: Billing Accuracy

Correlations

		Overall, how satisfied or dissatisfied are you with the water supply service you have received?	The accuracy of billing?
Overall, how satisfied or dissatisfied are you with the water supply service you have received?	Pearson Correlation	1.000	.304**
	Sig. (2-tailed)		.000
	N	617.000	562
The accuracy of billing?	Pearson Correlation	.304**	1.000
	Sig. (2-tailed)	.000	
	N	562	563.000

**. Correlation is significant at the 0.01 level (2-tailed).

Appendix 10f: Relevant Knowledge of Staff

Correlations

		Overall, how satisfied or dissatisfied are you with the water supply service you have received?	The relevant knowledge and trust of the staff you dealt with directly?
Overall, how satisfied or dissatisfied are you with the water supply service you have received?	Pearson Correlation	1.000	.205**
	Sig. (2-tailed)		.009
	N	617.000	163
The relevant knowledge and trust of the staff you dealt with directly?	Pearson Correlation	.205**	1.000
	Sig. (2-tailed)	.009	
	N	163	166.000

**. Correlation is significant at the 0.01 level (2-tailed).

Appendix10g: Courtesy of Staff

Correlations

		Overall, how satisfied or dissatisfied are you with the water supply service you have received?	The courtesy of the staff
Overall, how satisfied or dissatisfied are you with the water supply service you have received?	Pearson Correlation	1.000	.216**
	Sig. (2-tailed)		.005
	N	617.000	168
The courtesy of the staff	Pearson Correlation	.216**	1.000
	Sig. (2-tailed)	.005	
	N	168	171.000

**. Correlation is significant at the 0.01 level (2-tailed).

Appendix 10h: Helpfulness and Interest of Staff

Correlations

		Overall, how satisfied or dissatisfied are you with the water supply service you have received?	The helpfulness and interest that the staff showered in you as a valued customer?
Overall, how satisfied or dissatisfied are you with the water supply service you have received?	Pearson Correlation	1.000	.359**
	Sig. (2-tailed)		.000
	N	617.000	164
The helpfulness and interest that the staff showered in you as a valued customer?	Pearson Correlation	.359**	1.000
	Sig. (2-tailed)	.000	
	N	164	167.000

**. Correlation is significant at the 0.01 level (2-tailed).

Appendix 11: LISTWISE Regression Analysis Table

Appendix 11a: Reliability and Overall

Variables Entered/Removed[b]

Model	Variables Entered	Variables Removed	Method
1	The reliability of water supply?[a]	.	Enter

a. All requested variables entered.

b. Dependent Variable: Overall, how satisfied or dissatisfied are you with the water supply service you have received?

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.817[a]	.667	.667	.61796

a. Predictors: (Constant), The realibility of water supply?

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	471.464	1	471.464	1234.615	.000[a]
	Residual	234.851	615	.382		
	Total	706.314	616			

a. Predictors: (Constant), The realibility of water supply?

b. Dependent Variable: Overall, how satisfied or dissatisfied are you with the water supply service you have received?

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.298	.062		4.810	.000
	The realibility of water supply?	.848	.024	.817	35.137	.000

a. Dependent Variable: Overall, how satisfied or dissatisfied are you with the water supply service you have received?

Appendix 11b: Colour and Appearance

Variables Entered/Removed[b]

Model	Variables Entered	Variables Removed	Method
1	The colour and appearance of the water supplied?[a]	.	Enter

a. All requested variables entered.

b. Dependent Variable: Overall, how satisfied or dissatisfied are you with the water supply service you have received?

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.258[a]	.067	.065	1.02628

a. Predictors: (Constant), The colour and appearance of the water supplied?

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	45.994	1	45.994	43.669	.000[a]
	Residual	645.639	613	1.053		
	Total	691.633	614			

a. Predictors: (Constant), The colour and appearance of the water supplied?

b. Dependent Variable: Overall, how satisfied or dissatisfied are you with the water supply service you have received?

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.301	.155		8.405	.000
	The colour and appearance of the water supplied?	.498	.075	.258	6.608	.000

a. Dependent Variable: Overall, how satisfied or dissatisfied are you with the water supply service you have received?

Appendix 11c: Water Pressure

Variables Entered/Removed[b]

Model	Variables Entered	Variables Removed	Method
1	The pressure of the water supplied?[a]	.	Enter

a. All requested variables entered.

b. Dependent Variable: Overall, how satisfied or dissatisfied are you with the water supply service you have received?

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.434[a]	.188	.187	.95857

a. Predictors: (Constant), The pressure of the water supplied?

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	130.051	1	130.051	141.537	.000[a]
	Residual	561.417	611	.919		
	Total	691.468	612			

a. Predictors: (Constant), The pressure of the water supplied?

b. Dependent Variable: Overall, how satisfied or dissatisfied are you with the water supply service you have received?

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.227	.097		12.625	.000
	The pressure of the water supplied?	.450	.038	.434	11.897	.000

a. Dependent Variable: Overall, how satisfied or dissatisfied are you with the water supply service you have received?

Appendix 11d: Taste and Smell

Variables Entered/Removed[b]

Model	Variables Entered	Variables Removed	Method
1	The taste and smell of water supplied?[a]	.	Enter

a. All requested variables entered.

b. Dependent Variable: Overall, how satisfied or dissatisfied are you with the water supply service you have received?

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.450[a]	.203	.201	.94929

a. Predictors: (Constant), The taste and smell of water supplied?

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	140.044	1	140.044	155.405	.000[a]
	Residual	551.507	612	.901		
	Total	691.550	613			

a. Predictors: (Constant), The taste and smell of water supplied?

b. Dependent Variable: Overall, how satisfied or dissatisfied are you with the water supply service you have received?

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.462	.151		3.050	.002
	The taste and smell of water supplied?	.943	.076	.450	12.466	.000

a. Dependent Variable: Overall, how satisfied or dissatisfied are you with the water supply service you have received?

Appendix 11e: Billing Accuracy

Variables Entered/Removed[b]

Model	Variables Entered	Variables Removed	Method
1	The accuracy of billing?[a]	.	Enter

a. All requested variables entered.

b. Dependent Variable: Overall, how satisfied or dissatisfied are you with the water supply service you have received?

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.304[a]	.092	.091	.97061

a. Predictors: (Constant), The accuracy of billing?

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	53.654	1	53.654	56.953	.000[a]
	Residual	527.570	560	.942		
	Total	581.224	561			

a. Predictors: (Constant), The accuracy of billing?

b. Dependent Variable: Overall, how satisfied or dissatisfied are you with the water supply service you have received?

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.445	.109		13.220	.000
	The accuracy of billing?	.267	.035	.304	7.547	.000

a. Dependent Variable: Overall, how satisfied or dissatisfied are you with the water supply service you have received?

Appendix 11f: Relevant Knowledge and Trust

Variables Entered/Removed[b]

Model	Variables Entered	Variables Removed	Method
1	The relevant knowledge and trust of the staff you dealt with directly?[a]	.	Enter

a. All requested variables entered.

b. Dependent Variable: Overall, how satisfied or dissatisfied are you with the water supply service you have received?

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.205[a]	.042	.036	1.06712

a. Predictors: (Constant), The relevant knowledge and trust of the staff you dealt with directly?

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	8.025	1	8.025	7.047	.009[a]
	Residual	183.337	161	1.139		
	Total	191.362	162			

a. Predictors: (Constant), The relevant knowledge and trust of the staff you dealt with directly?

b. Dependent Variable: Overall, how satisfied or dissatisfied are you with the water supply service you have received?

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.582	.303		5.215	.000
	The relevant knowledge and trust of the staff you dealt with directly?	.323	.122	.205	2.655	.009

a. Dependent Variable: Overall, how satisfied or dissatisfied are you with the water supply service you have received?

Appendix 11g: Courtesy of Staff

Variables Entered/Removed[b]

Model	Variables Entered	Variables Removed	Method
1	The courtesy of the staff[a]	.	Enter

a. All requested variables entered.

b. Dependent Variable: Overall, how satisfied or dissatisfied are you with the water supply service you have received?

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.216[a]	.047	.041	1.06637

a. Predictors: (Constant), The courtesy of the staff

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	9.211	1	9.211	8.100	.005[a]
	Residual	188.765	166	1.137		
	Total	197.976	167			

a. Predictors: (Constant), The courtesy of the staff

b. Dependent Variable: Overall, how satisfied or dissatisfied are you with the water supply service you have received?

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.549	.292		5.311	.000
	The courtesy of the staff	.377	.132	.216	2.846	.005

a. Dependent Variable: Overall, how satisfied or dissatisfied are you with the water supply service you have received?

Appendix 11h: Helpfulness and Interest of Staff

Variables Entered/Removed[b]

Model	Variables Entered	Variables Removed	Method
1	The helpfulness and interest that the staff showered in you as a valued customer?[a]	.	Enter

a. All requested variables entered.

b. Dependent Variable: Overall, how satisfied or dissatisfied are you with the water supply service you have received?

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.359[a]	.129	.123	1.02371

a. Predictors: (Constant), The helpfulness and interest that the staff showered in you as a valued customer?

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	25.105	1	25.105	23.956	.000[a]
	Residual	169.773	162	1.048		
	Total	194.878	163			

a. Predictors: (Constant), The helpfulness and interest that the staff showered in you as a valued customer?

b. Dependent Variable: Overall, how satisfied or dissatisfied are you with the water supply service you have received?

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.134	.259		4.372	.000
	The helpfulness and interest that the staff showered in you as a valued customer?	.466	.095	.359	4.894	.000

a. Dependent Variable: Overall, how satisfied or dissatisfied are you with the water supply service you have received?